THOMAS JEFFERSON
NATIONAL ACCELERATOR FACILITY

TEN-YEAR SITE PLAN

FY 2006 – FY 2015

October 2004

Operated by Southeastern Universities Research Association, Inc.
Under Contract with the U.S. Department of Energy
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ATTACHMENTS

Acronym List

ACI	Asset Condition Index (1-FCI)
ARC	Applied Research Center
AUI	Asset Utilization Index
BES	Office of Basic Energy Science
CAS	Condition Assessment Inspections
CEBAF	Continuous Electron Beam Accelerator Facility
CHL	Central Helium Liquifier
DM	Deferred Maintenance
DOD	Department of Defense
DOE	Department of Energy
EEL	Experimental Equipment Laboratory
EH&S	Environmental Health & Safety
ESnet	Energy Sciences Network
F&I	Facilities & Infrastructure
FCI	Facility Condition Index (DM/RPV)
FEL	Free Electron Laser
FIMS	Facility Information Management System
FTE	Full Time Equivalent
FTS	Federal Telecommunication System
FY	Fiscal Year (1 October to 30 September)
GeV	Giga (billion) electron volt
Gpm	Gallon Per Minute
GSA	General Services Administration
GPP	General Plant Project
HVAC	Heat, Ventilation, and Air Conditioning
IWS	Intermediate Water System
JLab	Thomas Jefferson National Accelerator facility
K	Thousand
kV	Kilovolt
kW	Kilowatt
LAN	Local Area Network
LCW	Low Conductivity Water
LF	Linear Feet
MARS	Management Analysis Reporting System
MCC	Machine Control Center
MII	Maintenance Investment Index (Actual Maintenance Cost/RPV)
NASA	National Aeronautical and Space Administration
LINAC	Linear Accelerator
LQCD	Lattice Quantum Chromodynamics
M	Million
MCC	Machine Control Center
MW	Megawatts
MeV	Million electron volts
NP	Office of Nuclear Physics

OSF	Other Structures & Facilities
PA	Punbli Address
PVC	Polyvinyl Chloride
QA	Quality Assurance
QCD	Quantum Chromodynamics
R&D	Research & Development
RIA	Rare Isotope Accelerator
RIC	Rehab & Improvement Cost
RPV	Replacement Plant Value
SC	Office of Science
Sec	Second
SF	Square Feet
SLI	Science Laboratory Infrastructure
SNS	Spallation Neutron Source
SREL	Space Radiation Effects Laboratory
SRF	Superconducting Radio Frequency
SURA	Southeastern Universities Research Association, Inc
TBD	To Be Determined
TYSP	Ten Year Site Plan
TJNAF	Thomas Jefferson National Accelerator facility
VARC	Virginia Associated Research Campus
WAN	Wide Area Network

I. SITE SUMMARY

Thomas Jefferson National Accelerator Facility (TJNAF, Jefferson Lab, or JLab), as one of the Office of Science (SC) program-dedicated labs, primarily studies hadronic physics through the use of continuous wave electron beams. Operating as a user facility by Southeastern Universities Research Association, Inc. (SURA) for the Department of Energy (DOE), JLab provides experimenters with beams and detection equipment that are unique worldwide. JLab maintains its core competencies in support of its nuclear physics program and broader Office of Science missions in the context of the national lab system (i.e., Spallation Neutron Source (SNS)), and applies its related technologies to activities in the national interest (i.e., Free Electron Laser (FEL)).

At the end of FY04 the site employed a total of 698 SURA (regular, part-time, casuals/students), 12 DOE, 11 State Employees and 31 subcontractors, all of which occupy site facilities. In a normal year Jefferson Lab also serves a physic research 'user' population of over 2,000. These users are from the United States and numerous other nations. An average of 200 users are on site at any one time. These populations are supported on the land and facilities as described in this plan.

Approximately 162.5 acres comprise the DOE owned Thomas Jefferson National Accelerator Facility located in Newport News, Virginia. Historically there were several former users of this general area. 110 acres was the site of the former Space Radiation Effects Laboratory (SREL) operated by the National Aeronautics and Space Administration (NASA) where there was a 600 million electron volt synchrocyclotron from 1964 to 1984. The SREL, associated parking, cooling towers, and small building annex comprised 10 acres of the total former site with the remaining 100 acres being heavily wooded and undeveloped. The existing building and land were transferred from NASA to DOE in 1987 with a reimbursement to the General Services Administration (GSA) in the amount of $2.3 million that was funded by the City of Newport News, Virginia. The SREL building is now used as the Test Lab at Jefferson Lab.

Adjacent to the NASA property to the east is an 83.65 acre parcel previously owned by U.S. Department of Defense then U.S. Department of Education for which the City of Newport News reimbursed GSA $1.498 million in 1982. The City of Newport News gifted 44.6 acres of this property to SURA in support of the contract between SURA and DOE that was sold to DOE for $1 in January 1987. The City of Newport News had gifted another 51.5 acres to SURA in 1988. In 1993, 7.9 additional acres were transferred to DOE by SURA. Some of this property was a US Air Force BOMARC Missile Site that existed during the 1950's and was abandoned in the early 1960's.

SURA retained the 43.6 acres, adjacent to the Jefferson Lab site, for a 42-room SURA owned and operated Residence Facility and future Lab related activities. The SURA Residence Facility is available for use by guests, visitors, users, and graduate students associated with the Lab. North of the DOE site is an 8 acre parcel referred to as the Virginia Associated Research Campus (VARC) which is owned by the Commonwealth of Virginia and leased to SURA for use in support of Jefferson Lab. A total of 4.8 of these acres containing the VARC and Forestry buildings are subleased to DOE. Both the SURA and VARC property are included in overall site

planning. The Site Plan (Attachment 1) illustrates the property line boundaries. Attachment 2 is an aerial photo.

Funding from the Commonwealth of Virginia was provided for the construction of the 31,176 SF Free Electron Laser (FEL) Facility on DOE property, which was completed in 1997 and transferred to DOE. See photo in Attachment 3.

Jefferson Lab consists 62 owned buildings, 2 state leased buildings, 23 real property trailers, 10 other structures and facilities totaling 686,972 square feet (SF). Included are 49,346 square feet of real property trailers with an average age of 13 years that provide offices to approximately 150 employees and 250 users. The replacement value of conventional facilities and utilities is $206 million. Attachment 4 is a list of the facilities.

Adjacent to the northwest of Jefferson Lab, SURA leases 44,342 SF of office and lab space from the City of Newport News (see photo in Attachment 3). In addition to these facilities, Jefferson Lab has 70 personal property trailers used for storage containing 21,744 SF scattered around the site and 11,558 SF off-site leased storage space. The total operating budget for the Lab in FY04 was $113.3M. Lab space distribution by GSA Use codes is as follows:

Table I-1. Lab Space Distribution (Oct 2004)

GSA Use Code	Description	Owned – Gross SF				Leased – Gross SF	
		Building	Real Property Trailers	Personal Property Trailers	OSF Category 3000	Building	Total SF
10	Administration	66,277	41,901			79,081	187,259
20	School		1,327				1,327
40	Storage	25,810	660	21,744		11,558	59,772
50	Industrial Bldgs	7,235					7,235
60	Service Bldgs	4,373	3,518			2,904	10,795
70	Research & Development	303,118	1,940		192,792		497,850
80	Other	378					378
Total		407,191	49,346	21,744	192,792	93,543	764,616

II. MISSION

Jefferson Lab programs and plans are aligned with the mission and goals of the Department of Energy and consistent with the Office of Science Strategic Plan. Laboratory programmatic priorities are outlined in the Laboratory's Institutional Plan. The Ten Year Site Plan follows these priorities with the goal of providing the necessary facilities and infrastructure needed to accomplish mission activities.

Jefferson Lab's October 10, 2003 Institutional Plan includes the following priorities:

- Execution of a world class experimental program in hadronic physics, both at the current 6 GeV energy and preparing for the anticipated 12 GeV Upgrade (Office of Nuclear Physics (NP) funding).

- Partnering on the Spallation Neutron Source (SNS) project to deliver the superconducting linac and supporting cryogenic facilities (Office of Basic Energy Science (BES) funding), which will conclude Spring 2005.

- Commission the 10 kW infrared and complete the 1 kW ultraviolet Free Electron Laser upgrades (Department of Defense (DOD) funding).

- Development of advanced computational techniques to solve Quantum Chromodynamics (QCD) numerically termed Lattice QCD (LQCD).

Other anticipated mission changes include:

- Evolution of the SRF (Superconducting Radio Frequency) Institute with involvement in 12 GeV Upgrade here at Jefferson Lab plus possible work on the International Linear Collider, RIA, 8 GeV LINAC at Fermi, Superconducting LINAC at Brookhaven, and FEL work for the Navy.

- FEL 100 kW Upgrade beginning in FY05 over a three-year period (DOD funding).

- Continued expansion of the LQCD program for the next several years.

Effects on Facilities and Infrastructure:

Facilities originally built to support the 4 GeV and that now support the 6 GeV program were built with marginal user and limited technical support space with no planned further growth. The only major building added since completion of the original construction was the lease of the ARC Building. Additional technical support space is desperately needed to adequately support the current mission.

Expected continued growth of our current program user community, growth of the FEL user community, and growth of staff associated with the above anticipated programs will increase the need for both technical support and office space.

The 12 GeV upgrade will require increases in facilities and infrastructure with expansion of the Central Helium Liquifier (CHL) building, increase in capacity of Low Conductivity Water (LCW) systems, increase of the electrical distribution systems, and additional tunnel air conditioning. The 12 GeV upgrade also includes the addition of a fourth experimental hall, counting house, and associated service buildings. These planned additions total about 25,000 square feet.

Continuation of the above programs will require additional experimental setup and storage space.

FEL 100 kW upgrade will require additional LCW and electrical utility capacity and possibly another FEL building.

Additional expansion of the LQCD program will require additional cooling to support the added computer heat loads and conditioned power.

Anticipated involvement in the International Linear Collider and other SRF programs will require facility upgrades that are not defined at this time.

Major trends and staffing and user levels:

Staffing levels for the last several years have been around 700 FTE with a FY04 end of year head count of 744. Staffing is expected to increase during 12 GeV construction with a permanent increase for 12 GeV operations. Future updates to this plan will address specifics. End of year staff head count trends are as follows (in the process of being updated):

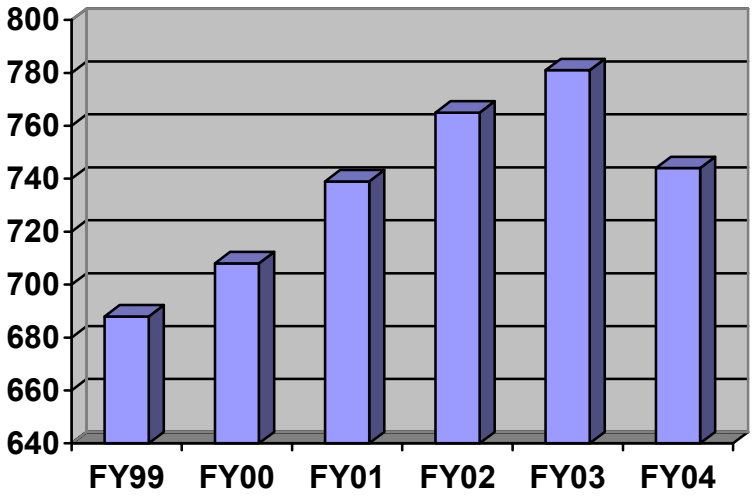


Figure II-1 Staff Trends

The User community is about 2,000 individuals, both domestic and international, with User on site presence varying between 150 to over 300 at any given time. This community is expected to continue to grow in total strength as well as the average number on site.

III. LAND USE PLANS

As suggested in the DOE guidance the Land Use Plan for TJNAF has been rolled up into this Ten Year Site Plan (TYSP). In order to save time and effort and to facilitate the approval process, the land use plan will continue to be a part of the TYSP annual update. Attachment 5 is the 10-Year Master Plan.

IV. FACILITIES AND INFRASTRUCTURE

A. Site and Facilities Description

The Jefferson Lab site, located in Newport News, Virginia, includes 162.5 acres owned by DOE and eight acres owned by the Commonwealth of Virginia. The facilities include the CEBAF accelerator complex serving three experimental halls, the FEL Facility, a central office building (CEBAF Center), two major laboratory buildings, and various other support structures totaling 708,716 sq ft in 161 facilities. Included are about 50,000 square feet of office trailers and 20,000 square feet of storage containers. A list of facilities is in Attachment 4. The replacement value of the DOE owned facilities and utilities is $206 million (see Attachment 7). An addition to CEBAF Center scheduled for completion in FY06 will add about 61,000 SF of office and computing space and eliminate 22,000 SF of trailers.

The CEBAF accelerator enclosure is a 7/8-mile racetrack-shaped concrete tunnel located 25 feet underground. The tunnel houses a 65 MeV injector, two 600 MeV linacs—one in each straight section of the racetrack—and 3.73 miles of beam transport lines. The CHL, a 75,000 liquid liter, 4800-watt refrigerator plant located in the interior of the racetrack, supplies liquid helium at 2 Kelvin to the accelerator for the ultracold environment needed for superconducting operation. The Machine Control Center (MCC) houses the computer systems that control and monitor accelerator operations. The FEL generates high power infrared light using the accelerator technology, and shares the CHL, site power, and cooling water.

The experiment area consists of three large domed concrete halls, partially underground and mounded with earth for shielding. The floors are about 36 feet below existing grade and the domes extend up to 45 feet above grade. Hall A is 174 feet in diameter, Hall B is 98 feet diameter, and Hall C is 150 feet diameter. The major support building for the experimental physics area is the Counting House, where physicists control and monitor the experimental runs. Some 35 support structures in the accelerator/experimental area complement these major structures.

Major structures on the remainder of the site provide administrative space, as well as laboratory and technical support facilities. CEBAF Center provides office space, an auditorium, and cafeteria, and houses the computer center. The Experimental Equipment Laboratory (EEL) provides light laboratory space for detector fabrication and machine shops. The Test Lab is a high-bay building housing major component assembly, test, and maintenance functions.

The City of Newport News has constructed the Applied Research Center (ARC) building on an 11-acre site directly adjacent to the Laboratory. The 121,000 sq ft structure, completed in the

spring of 1998, provides office and light laboratory space for lease to qualified tenants. Jefferson Lab has leased 44,342 sq ft. Five local collaborating universities also have leased space. The ARC is the anchor for the city's planned 200-acre Jefferson Center for Research and Technology, a technology park for high technology research and development and production activities.

B. Strategic Facilities & Infrastructure (F&I) Goals and Issues

The goals of the Jefferson Lab facilities and infrastructure management plan are:

- Provide a safe, healthy, secure "preferred" working environment for laboratory employees and visitors. Keep current with technological changes as they support the mission.
- Design facilities readily adaptable to changing research requirements and technologies.
- Maintain existing facilities sufficient to maintain building functionality and make alterations to realize energy and cost savings.
- Provide office and technical space corresponding to manpower projections.
- Eliminate substandard storage space and structures that have reached the end of their useful lives.
- Eliminate to the extent possible the use of trailers for office space and phase out the use of transportainers for storage.
- Co-locate work groups to the extent possible to enhance effectiveness.
- Eliminate leases that do not lead to building ownership and minimize off-site leases.

Shortfalls of our current facilities meeting current mission needs were identified. All discussions of these shortfalls with Director's Council fell into one of the following categories:

Inadequate technical support space. Currently staff is working out of accelerator service buildings and aging trailers with many of the groups not collocated, or not located near their work. These problems can be traced back to shortages of this type of space since original construction. The situation continually worsens due to the condition of the trailers which were intended to be a temporary space, increase in staffing, and evolution of the accelerator. The trailers could be replaced, but due to cost, it is not felt to be a wise life cycle investment to satisfy a steady state requirement with a permanent facility. In addition, some of the technical support space currently located in service buildings will have to be relocated since those buildings are needed for the 12 GeV Upgrade. Also, the service buildings were not designed for occupancy and therefore do not meet the goal of "preferred" working environment.

Additional experimental setup space. Due to the overwhelming success of CEBAF there remains large experimental backlog consisting of increasingly more complex experimental setups, some taking up to six months to stage. Jefferson Lab lacks sufficient staging space to accommodate these setups. To make the best use of "machine" time these setups occur outside the experimental halls thus minimizing time between actual experiments. In addition many of the experiments are scheduled hall time

in separate segments, which sometimes requires the setup being removed from the hall and stored and/or modified before the next scheduled experimental schedule. Additional space would allow the Lab to improve experimental scheduling efficiency.

Storage. Jefferson Lab currently has two off site warehouses, one on site storage building, and nearly 70 shipping containers used for storage. Experimental equipment is typically shipped (domestic and international) to the Lab by the research sponsoring institution for assembly. The components are collected and then moved to an experimental setup area for assembly. At the conclusion of the experiment, devices are stored for future use, disassembled and stored for return shipment to the sponsoring labs or institutions, or excessed. Off site storage isn't very practical because of the size of the material and the relative cost to transport the material repeatedly over public roads.

There are both steady state and surge storage needs. There is a need for the steady state storage requirement to be met using onsite facilities with surge requirements being met with temporary on site structures or off site leases.

Utilities & Infrastructure. The roadway and utility systems have been essentially unchanged since completion of the initial construction in 1992. With the increase of overall personnel at the site, there is a need for additional roadways to improve the safety and efficiency of internal vehicular movement. This is particularly important during periods of heightened security. Currently during these periods vehicles have to go outside one security checkpoint and enter a second to transit from one side of the campus to the other. Minimal sidewalks were part of the original construction leaving individuals to walk on the major streets at the Lab to get from the campus to the accelerator site buildings. Inadequate visitor parking exists to serve the many conferences and meetings held at the Lab.

Any excess capacity in the low conductivity and cooling water system built in during the original 4 GeV construction has been utilized for the current 6 GeV state to the extent that there are shortages in several areas. In addition, the lack of sufficient emergency electrical power during Hurricane Isabel in September 2003 caused a loss of all liquid helium, which allowed the accelerator to warm up. This event caused a 5-week delay in the experimental program. NP has funded installation of an emergency generator that will protect the critical systems for power outages up to 36 hours with a future (Phase 2) project identified allowing connection of 10 MW of mobile generators for extended operation of the CHL facility.

Several times during the past several years the backup of stormwater on the property has been a problem. A stormwater study was completed in 2003 that identified numerous maintenance and improvement projects, including cleaning and widening of channels and installation of three stormwater retention ponds.

Education Space. Jefferson Lab has from its beginning had a strong tie with the community. This is largely due to the education program the Lab delivers to primary and

secondary school students. The demand for the program exceeds the available capacity, which is limited by the number of classrooms.

Security. Security was discussed within terms of two options for managing access, centralized and decentralized. The centralized option would include a manned gatehouse at the site entrance and a site perimeter fence. The decentralized option would control access at the building or area level similar to what is currently being done. Both options are actively being considered in light of the local security needs, implementation of the new DOE Foreign Visits and Assignments Order, and the national security level.

Other. Experience with SNS and *Renascence* production has shown that the existing infrastructure is not configured to minimize the risk of contamination, the leading cause of poor cavity performance. Modest upgrades, particularly in the area of process controls, are expected to be adequate to support the performance needs of the 12 GeV Upgrade and RIA projects. Higher performance goals, in particular those of the International Linear Collider, will require substantial changes to the infrastructure to provide the required assurances of high-yield production.

Key Facilities and Infrastructure issues in meeting these goals are primarily driven by the large number of personnel housed in "temporary" trailers and the fact that the Lab did not start out with an adequate amount of technical support and user space from the beginning. Correcting this shortfall has been materially hampered by the limited funds overall for scientific and infrastructure priorities. CEBAF Center Addition Phase 1, a Science Laboratory Infrastructure (SLI) project, will greatly assist in providing needed computational and office space when completed in FY06. The shortage of computational space is not identified as a shortfall since the project is under construction.

C. Condition Assessment Process

The Facilities Management Department manages a facilities condition assessment program that utilizes a multidisciplinary team including an architect, engineers, EH&S personnel, and building occupants to evaluate the functional condition and maintenance needs of each facility. These evaluations are performed on a three-year cycle. Results of the assessment are prioritized and either handled as a corrective work request or programmed for future funding. In 2003, this condition assessment program utilized a consultant in lieu of in-house personnel.

D. Condition Overview

The overall condition of the buildings, utilities, and other structures is good; however the size of the maintenance backlog (deferred maintenance) is expected to grow. The average of the facilities is 13 years with the majority being built around the same time. As the buildings continue to age we expect major maintenance cost spikes at 20 and 25 years.

The high Asset Condition Index (ACI) value of the OSF 3000 category is driven by the low maintenance requirements of the tunnel and experimental halls relative to their Replacement Plant Value (RPV). The lowest ACI value is for our real and personal property trailers, which

were intended as temporary structures and are past their life expectancy. Specific FIMS data for the various facility categories is shown below.

Table IV-1. Deferred Maintenance (FY 2004)

Category	2004 Deferred Maintenance (DM), $M	2004 Asset Condition Index	2004 Rehab & Improvement Cost (RIC), $M
Buildings			
- DOE Owned	$3.20	.96	$35.68
- State Owned	$.41	.94	$.03
Real Property Trailers	$4.80	.01	$0
Personal Property Trailers	$.55	.04	$0
OSF – 3000 Category	$.29	1.00	$.27
OSF – Non 3000 Category (Utilities, Roads, etc.)	$1.31	.93	$7.42
Total	$10.56	.95	$43.40

Refer to Section Q of this Plan for Management of Deferred Maintenance. The need to replace real and personal property trailers and the inadequate technical space are the drivers for the technical support space and storage GPP projects.

E. Facilities Management, Space Management and Utilization

Jefferson Lab operates all facilities under a landlord-tenant arrangement where space is assigned under the direction of the Lab Director and the Director's Council to divisions, departments, and groups for specific use in support of the Lab's mission. (JLab Policy 301.04 Management of Space and Storage, Administration Manual.)

Jefferson Lab does not use a space charge. Facilities Management is responsible for collecting space needs from Jefferson Lab divisions through a designated representative, periodic auditing of space use, and recommendations for changes in use or assignment of space. The Lab has no excess facilities. The Asset Utilization Index (AUI) for Jefferson Lab is 1.

Recommendations for changes in space assignments as well as maintenance and construction priorities are coordinated with a Lab cross-divisional Infrastructure Committee prior to recommended actions going to Director's Council.

F. Facilities Supporting Mission Activities

Jefferson Lab is a single purpose Nuclear Physics facility under the Office of Science (SC). In addition there is some support from the Commonwealth of Virginia and the DOD in the form of contracts with the Navy, Air Force, and Army.

Jefferson Lab's total future funding profiles from the SC are expected to be level except for an increase in funding coming with the 12 GeV project. There may be some increase in DOD funding related to FEL projects during the next few years.

The Facilities Management Department, within the Administration Division is responsible for management and operation of all Jefferson Lab facilities. Assigned facilities are listed in Attachment 4. The Lab's average age of buildings is 13 years. Typically facility maintenance funding is allocated as an overhead item with the exception of some direct Safeguards & Security funds for maintenance of the access control system. The benefiting JLab division for improvements typically provides funding for program-dedicated facilities.

Overall Jefferson Lab's facility condition is good and the projected trend indicates it will remain good over the next ten years. Approximately 50% of the Lab's deferred maintenance is associated with the real property trailers that also have an average age of 13 years. Over 30% of Jefferson Lab's staff and users are in real property trailers. These trailers are inadequate space, need to be replaced and are costly to maintain. CEBAF Center Addition Phase 1, under construction and scheduled for completion in FY06, will eliminate about 45% (22,000 SF) of these trailers.

The Lab leases two Commonwealth of Virginia owned facilities (VARC & Forestry) totaling 37,643 SF for $1 per year plus the responsibility for all associated operating and maintenance cost. In addition, the lease cost of the ARC Building from the City of Newport News is structured so the Lab is responsible for its share of the operating and maintenance cost. The maintenance cost for these three facilities are not included in the Lab's Maintenance and Infrastructure Investment (MII) calculation. We believe the two Commonwealth of Virginia owned facilities should be included in the MII calculation to accurately state the Lab's maintenance investment since maintenance is performed on these buildings as if they were DOE owned. Even with this omission Jefferson Lab met the 2 % MII Office of Science goal.

There are two major facility issues – inadequate space and aging real property trailers that are discussed in paragraph B, Strategic Facilities Goals and Issues.

Facility utilization is not a significant issue at Jefferson Lab with a asset utilization index of 1. There are no excess buildings or non-utilized space. This understates the fact that many individuals work in accelerator service buildings, multiple users share a desk, and labs/experimental setup areas are overcrowded.

G. Site Utility Systems

Each site utility system is described below with utility site plans shown in Attachment 6.

> **Water System.** The City of Newport News supplies potable water to the site via a 24-inch water main along Jefferson Avenue on the West boundary and along Canon Boulevard on the East boundary. One 12" tap at each of these locations provides domestic and fire suppression water at 65 psi.

The EEL, CEBAF Center and SURA Residence Facility water distribution systems consist of a 12" branch that is normally open to receive water from both the Jefferson Avenue and Canon Boulevard taps.

Sanitary System. The Hampton Roads Sanitation District provides sanitary service through a lift station on Jefferson Avenue at the edge of the site. Sanitary sewage is piped through a network of gravity drainpipes from the campus buildings and Jefferson Lab owned sewage lift stations from the Accelerator Site and the Residence Facility. The existing system is adequate for existing facilities. Additional lines and lift stations will be needed for planned growth. There is no deferred maintenance for the sanitary system however the gravity lines from the Test Lab and VARC are more than 39 years old. Cost for necessary expansion will be part of the individual construction projects.

Storm Drainage System. Storm water runoff is conveyed by a series of vegetated open storm channels and pipe culverts to either Canon Pond (east of the site) or Oyster Point Drainage Ditch (south of the site) that ultimately discharge into Big Bethel Reservoir. A small portion of the site drains along Jefferson Avenue on the west side of the site. Jefferson Lab is relatively flat and primarily hydrologic soil group D (slow infiltration rate). In 2000, there was significant amount of area flooding including Jefferson Lab due to two back to back hurricanes. A stormwater study was completed in February 2003 for the entire site that identified both maintenance and capital investment needs. The condition of this utility is considered adequate. Deferred maintenance is approximately $174,000 with planned completion in FY06. Capital investment plans, estimated at $1.7 million, include construction of three retention ponds and reconfiguration of existing open drainage channels.

Natural Gas System. Virginia Natural Gas supplies natural gas to the site through a supplier owned 8-inch line along Jefferson Avenue and distributed on site through separate lines to the Accelerator Site, CEBAF Center, and the VARC and is utilized at 6 buildings and 7 emergency generators. Deferred maintenance does not apply. Service for future buildings would be provided by the local utility.

Electric Power. Dominion Virginia Power provides two independent 12.47 kV services to support the site:

1. 9 MVA, 34.5/12.47 kV from the Oyster Point Industrial Substation located near the Test Lab by way of a 34.5 kV underground circuit along Jefferson Avenue from the utility's Warwick Substation. This service is used primarily for campus buildings.

2. 40 MVA, 34.5/12.47 kV from the CEBAF Industrial Substation located on the Accelerator Site by way of a 34.5 kV overhead line through Oyster Point Industrial Park from the utility's Warwick Substation. This service is used primarily for accelerator operations including a central chiller located in the Test Lab basement (located outside the accelerator fence on campus) serving the accelerator service buildings.

In the event of an off site power failure in one of the systems or during system maintenance, emergency power can be transferred from the other system by way of a tie line by JLab personnel after coordinating with the electric utility. In addition there is a separate 120/208-volt service supplying the VARC building.

In September 2003, Hurricane Isabel damaged offsite power distribution systems, which caused a power loss to the entire site for a period of three days. This power loss resulted in the total loss of helium cooling the accelerator, which disrupted the experimental schedule for approximately five weeks. As a result the Lab is installing a 500KW emergency generator to power the Accelerator Emergency Loop and the MCC (estimated March 2005 completion). This new generator will reduce the volume of helium loss during power outages for up to 36 hours. A more robust alternative included in this TYSP is to install electrical switchgear to allow utilization of mobile power generation to the Accelerator site totaling 10 MW for extended power outages.

Jefferson Lab owns and maintains the switchgear, transformers and electric feeders downstream from the utility meters. The following emergency generators supply power to limited facilities during periods of outage:

Size	Fuel	Supplies Power to:
225 KW	Natural Gas	CEBAF Center
280 KW	Natural Gas	Experimental Hall Emergency Circuit
65 KW	Natural Gas	Test Lab
25 KW	Natural Gas	Bldg 87
25 KW	Natural Gas	Hall B Vacuum Pumps
20 KW	Natural Gas	Hall B Controls
20 KW	Natural Gas	VARC
16 KW	Natural Gas	CHL
12 KW	Natural Gas	Guard Shack

Low Conductivity Water System. Low conductivity cooling (LCW) water is supplied to a variety of research equipment as a cooling medium. There are nine individual systems at Jefferson Lab ranging in size from 180 to 2000 gpm. The LCW is processed domestic water that passes through filters and de-mineralizers before entering the cooling system. The LCW circulates throughout the equipment and is monitored and polished to maintain the proper conductivity. Four systems employ mechanical oxygen scavenging to reduce the potential for copper corrosion. This class of utility also includes the Intermediate Water System (IWS) which is a closed system serving the beam dumps in buildings 91 and 95.

The overall condition of the system is excellent. Recapitalization projects include the replacement of the fibercast pipe with stainless steel, increasing the capacity of the accelerator LCW systems to accommodate the 12 GeV upgrade, and replacing the obsolescent control systems. There has been some maintenance issues associated with galvanic corrosion which is being watched closely.

Chilled Water System. The Chilled Water system consist of approximately 5,500 LF of 8" Double Wall Pipe (Insulated) supply and 5,500 LF of 8" Return Piping PVC – uninsulated underground piping. The system distributes chilled water/glycol mixture from a central chiller to thirteen Accelerator Service Buildings to supply air conditioning.

Telecommunications System. The Lab currently owns and operates a Definity series model G3r switch, as the primary processor node. Three additional full size switch expansion cabinets are part of the system. Each cabinet is located in a different centralized location on the Lab's property. Approximately 806 analog, 1,079 digital, 67 Hybrid telephones and ISDN service for video conferencing are supported by this switching system. Pager service is supplied by subcontract. Radios and PA systems are managed and maintained by in-house personnel with commercial technical backup. Long distance service is provided by FTS 2001 and a subsequent subcontract, Telcove. Local telephone service is provided by subcontract from Telcove and Verizon.

Computer Networking. Jefferson Lab is served by a single OC-3 (155 mbit/sec) Wide Area Network (WAN) connection and many Local Area Networks (LAN). The WAN connection is provided by ESnet (Energy Sciences Network). ESnet is funded by the DOE Office of Science and provides WAN connectivity for DOE-related research and laboratories. Through this network a scientist at Jefferson Lab can connect to virtually any network in the world.

The Jefferson Lab LAN interconnects on-site computer systems, terminals, printers, and other network capable devices located in all Jefferson Lab buildings, the ARC, and the SURA/Jefferson Lab Residence facility. The LAN is comprised of 1000 mbit/sec Ethernet connections between core network devices and high bandwidth applications (data acquisition, mass storage systems, etc.) and 100 mbit/sec Ethernet connections to desktop systems, printers, and other network capable devices.

The requirements for the throughput of the WAN and LAN are determined by the data rates of the experiments. Upgrades to the WAN connection and parts of the LAN may be required for future experiments.

Helium Transfer Line. A utility site plan for the helium transfer lines is shown for coordination purposes only. This line is a component of the helium liquifaction process and not considered a conventional facility utility and therefore is not included in this Ten Year Site Plan analysis.

H. Leasing

Both current leases and proposed leases are shown below.

Current Leases.

Table IV-2. Current Leases

Name	Use	SF	# Employees	Future Plans
ARC Building	Office & Lab	44,342	156	Base lease expires FY08, extend lease until CEBAF Center Addition Phase 2 is funded
VARC	Office	34,739	75	Lease cost $1 per year; Lab is responsible for all operating and improvement costs. Continue to use indefinitely
Forestry	Office and Maintenance Shop	2,904	7	Lease cost $1 per year; Lab is responsible for all operating and improvement costs. Continue to use indefinitely
Middle Ground	Warehouse	4,478	None	Terminate lease upon completion of on site storage
Blue Crab	Warehouse	7,000	None	Continue until onsite facilities are funded.

Potential Leases. Technical Support Building 1, Technical Support Building 2, and Shipping & Receiving/Storage Building are under evaluation for construction using Program GPP Funds and/or Lease to Own. Only Technical Support Building 1 is shown below. Technical Support Building 2 and Shipping & Receiving/Storage Building is shown on the Infrastructure Crosscut as GPP projects. The two technical support buildings are needed to provide adequate workspace for staff currently working in service buildings or in aging trailers, a Lab goal. These buildings also support the Lab's goals of collocating work groups near where they work. Construction of the shipping/receiving facility relocates this function from a lab building in the center of the campus to the site perimeter, correcting both a security and safety concern.

Table IV-3. Potential Leases

Name	Use	SF	# Employees	Estimated Start Date
Technical Support Bldg. 1	Technical Shops, offices	33,000	80	FY06

I. Land Management

The Ten Year Site Plan serves as the Master Plan (see Attachment 5). SURA owns land adjacent for potential future use by the Lab. Land issues are listed below:

- Land will need to be transferred from SURA for construction of Hall D.
- Trailer City sits on both DOE and Commonwealth of Virginia property. This will no longer be an issue when the trailers are replaced by permanent structures, project to be in 2009.
- Building 13 is situated on both DOE and Commonwealth of Virginia property.

J. Disposition

Facilities planned for disposition (real property and personal property trailers) are typically the result of construction of replacement facilities. Disposition is funded under both SLI and indirect projects. Projects for elimination are as follows:

Table IV-4. Disposition

Project	Facilities	SF	Funding	Proposed FY
Oil Storage Bldg	058B	241	Indirect	FY05
CEBAF Center Phase 1	11, 11A, 11B, Partial 16, 34 D, 34 E	22,000	SLI	FY06
Technical Support Bldg 1	10, 34A, 34B, 34C, 34F, 34G, 53A, 53B, 53C	8,200	Indirect	FY07
Technical Support Bldg 2	Remainder 16, 94A, 96D, 101B	13,700	Indirect	FY07
CEBAF Center Phase 2	52A, 52B, 52C, 35, Offices in Test Lab High Bay	8,000	SLI	FY09
General Site Storage	~ 28 Transportainers	8,000	Indirect	FY11
Shipping/Receiving Storage	Remaining Transportainers	12,160	Indirect	FY13

K. Long Term Stewardship

There are currently no excess facilities at Jefferson Lab.

L. Future Liabilities Program

The City of Newport News prepared a Voluntary Remediation Report for the former BOMARC Missile Site in May 1999 for property previously owned by the City. The report defines areas of

known vinyl chloride and TCE contamination. Investigations are planned for FY05 to determine if any of this soil and groundwater contamination affects DOE property.

M. Value Engineering

External resources are used to perform value engineering for projects greater than $5M up to the 35% design point, and this is coordinated as part of the design review process. Decisions are made immediately following as to which recommendations are accepted for incorporation into the project.

Value engineering for smaller projects is typically performed internally and incorporated into the design review process at 35% and 100%.

N. Mission Essential Facilities

Jefferson Lab has not reviewed the facilities and labeled them as mission essential facilities. But, we have a list of critical facilities to the operation of the accelerator and associated science program. Mission critical facilities, Table IV-5, are defined at Jefferson Lab as those facilities included under the Lab's Highly Protected Risk Program (i.e., those facilities where a significant loss of use of the facility could cause a 3-month program delay and/or a property loss of $1,000,000). This typically does not affect allocation of maintenance funds except if the maintenance item could disrupt operations if not repaired.

Table IV-5. Mission Critical Facilities

Bldg No.	Building Name	Specific Use
8	Central Helium Liquifier	Accelerator Cryogenics
12	CEBAF Center	Office/Computer Center
18	Free Electron Laser Facility (FEL)	Other Materials R&D Test Bldg
38	South Access Bldg	Accelerator Service Bldg
53	Injector Service Bldg	Accelerator Service Bldg
58	Test Lab	Applied Physics Lab
67	North Access Bldg	Accelerator Service Bldg
90	Experimental Equipment Lab	Applied Physics Lab
94	Hall B (Incl. Beam Dump & Truck Ramp)	Accelerator R&D Lab
96	Hall C (Incl. Beam Dump & Truck Ramp)	Accelerator R&D Lab
97	Counting House	Computational Computing
101	Hall A (Incl. Beam Dump & Truck Ramp)	Accelerator R&D Lab
102	End Station Refrigeration Bldg	Accelerator Cryogenics
999	Beam Tunnel Facility	Accelerator

O. Five-year Sustainment Requirements

The current condition of Jefferson Lab facilities is rated good. Based on this TYSP, the Lab's facilities will remain good and exceed our F&I goal to maintain existing facilities sufficient to maintain functionality. With completion of CEBAF Center Addition Phase I the Computer Center Staff and a large portion of our Users will be moved into a "preferred" working

environment, another of the Lab's facility goals under section IV.B. Upon completion of the lease to own Technical Support Building 1 and construction of Technical Support Building 2 and CEBAF Center Addition Phase 2 all of our staff and Users will be in a "preferred" working environment and out of trailers.

On average current indirect funded maintenance spending breaks down to the following categories:

Deferred Maintenance Projects	8%
Corrective Maintenance Projects	55%
Preventative Maintenance Projects	18%
Reconfiguration Projects (not capitalized)	19%

The completion of CEBAF Center in FY06 will reduce deferred maintenance for trailers by over $2M. Based on our maintenance plan about $300K of indirect funds will be spent annually on deferred maintenance projects over the next five years. With the current funding assumptions deferred maintenance will not be eliminated within the planning period but facility condition will remain good..

Subcontractors perform corrective and preventative maintenance at Jefferson Lab. Spend rates exceed DOE cost of living increases of 2% and have been increasing about 4% per year due to service contract wage determinations dictated by the U.S. Department of Labor. The majority of buildings at Jefferson Lab were built between 1987 and 1992. As referenced in Whitestone Reports for life cycle cost, major expenditures occur between 15 and 25 years when mechanical and electrical systems reach the end of their service life. Current maintenance will remain about constant, except for inflation, for the next five years but should be expected to increase in the following five years.

A $4.2M energy savings project funded by 3rd party financing through the Bonneville Power Administration provided for replacement of several 35-year-old chiller system components, lighting upgrades in various buildings, and the upgrade of mechanical control systems that significantly reduced deferred maintenance.

GPP at Jefferson Lab is typically used to fund enhancements and typically not for deferred maintenance projects. The majority of the Lab's deferred maintenance, over $5.4M is for real and personal property trailers, is limited by the value of the trailers and not the cost to replace them with permanent structures. GPP and Operations funding requirements to replace these trailers total about $14.1M, over a ten-year period. These projects are Technical Support Buildings 1 and 2, General Storage Buildings, and Shipping-Receiving/Storage Building (being evaluated in FY05 for lease-to-own projects). In addition a proposed FY07 SLI project for CEBAF Center Addition Phase 2 would replace the remaining real property trailers and leased property.

In summary, the five-year sustainment requirements for FY06-FY10 as shown in the Facilities & Infrastructure Cross-cut, Attachment 9 are:

Indirect	Need	Current Funding
Deferred Maintenance Buildings	$2.0M	
Deferred Mmaintenance OSF Other	$0.7M	
Corrective Maintenance	$6.9M	
Preventative Maintenance	$2.3M	
Enhancements	$2.2M	
Total Indirect	**$14.1M**	**$11.9M**
GPP	$12.1M	$4.2M
SLI	$18M	$0

P. Maintenance Program for Nuclear Facilities

Jefferson Lab does not have any facilities that fall under DOE Order 433.1, Maintenance Program for Nuclear Facilities.

Q. Management of Deferred Maintenance

Jefferson Lab conducts Condition Assessment Inspections (CAS) on a three-year cycle. Inspections are conducted by a consultant multi-discipline team (ISES Corporation). During their on-site inspections, they meet with the facility users, maintenance personnel, and safety representatives. With data gathered, they develop detailed project scopes and cost estimates in three categories with a photographic log and drawings with iconography. This information is provided to Jefferson Lab in hard copy report and an electronic database. The three categories of projects are Deferred Maintenance (includes Capital Renewal project after its normal useful life), Capital Renewal, and Plant Adaption (code compliance, regulatory changes, facility use changes, etc). Each project is assigned one of four priority classes with an associated performance period of Immediate to Six-Ten Years. Facilities Management reviews and integrates the CAS projects with all other identified projects (maintenance, GPP, Line Item, etc.) into a central database for all projects.

At Jefferson Lab, all facility maintenance funds are managed by the Facilities Management Department. To ensure funds are spent on the "right" projects, Jefferson Lab reviews the projects from the central database and their assigned priorities on a quarterly FY cycle. This process starts with a review committee made up of building occupants, system owners, and maintenance staff. The recommendations of this committee are forwarded to the Director's Council Infrastructure Committee for finalization and approval. Projects critical to the Lab's safety and projects critical for mission are given high priority. Usually, maintenance projects associated with mission critical systems (typically mechanical and electrical) are completed as corrective maintenance and do not become deferred maintenance.

Attachment 8 provides FCI historical trends and projections for FY02 through FY08. Historically, the only significant change in FCIs was for Buildings from FY03 to FY04. This was due to a correction of an error. In previous years, high priority Capital Renewal and Plant Adaption from the CAS' were included in the deferred maintenance calculations. Jefferson Lab has only one building in the condition categories of poor or fail. The building is a small storage shed, 240 SF, valued at approximately $14,000. The plan is to replace this building in FY05.

The most significant impacts to Jefferson Lab's future FCIs will be the decrease of the numerator (deferred maintenance) with replacement of trailers with new buildings and increase of the RPV with construction of new buildings. Approximately 50% of the RPV increase is associated with the 12 GeV Upgrade. In FY06, approximately 22,000 square feet of trailers will be demolished with the occupancy of CEBAF Center Addition, Phase 1. This equates to a reduction of approximately 20% of Jefferson Lab's current deferred maintenance.

The projections do not take into consideration any increase in deferred maintenance from future Condition Assessment Inspections (CAS). Jefferson Lab's buildings have an average age of 13 years. Many building systems require replacement (capital renewal) on the 20-25 year cycle. As Jefferson Lab's buildings age, funding in out years needs to increase or the Capital Renewal projects will become deferred maintenance. With a RPV increase of $46 million, the maintenance budget will need to be increased by approximately $900,000 to maintain the MII above 2%. Considering the new buildings will have little maintenance requirements, the $900,000 per year should decrease the deferred maintenance in the initial years past FY08 and maintain the facilities in good condition.

R. Performance Indicators and Measures

FY04 Metrics:

4.2.1 Asset Condition Index (ACI) defined as one (1) minus the ratio of Deferred Maintenance to Replacement Plant Value.

4.2.2 Percentage of planned facility condition assessments completed during the fiscal year.

4.2.3 Percentage of indirect projects completed from the planned project list for the fiscal year.

Planned FY05 Metrics:

4.2.1 Asset Condition Index (ACI) defined as one (1) minus the ratio of Deferred Maintenance to Replacement Plant Value.

4.2.2 Percentage of planned facility condition assessments completed during the fiscal year.

4.2.3 Percentage of indirect projects completed from the planned project list for the fiscal year.

S. Process for Development of the TYSP

The process started with an interview with the Lab Director and members of the Director's Council to identify any gaps between the existing mission and the facilities to support them as

well as the identification of any proposed program changes and their associated facility requirements. Follow-up discussions were then held with middle managers to define requirements for current missions and planned changes. Options for closing the gap were presented and discussed. This data was put in terms of scope and cost and then distributed for review and prioritization. The prioritized project list was then presented to the Director's Council for approval.

The deferred maintenance list was reviewed to verify alignment with DOE definitions for Deferred Maintenance and Rehab and Improvement Cost (RIC). Projects were prioritized based on their impact to the program.

The Ten Year Site Plan is also coordinated with the DOE Site Office and the Office of Science prior to submission to DOE Headquarters.

T. Facility Information Management System (FIMS)

Since 2001, Jefferson Lab has made significant advancement with the population and quality assurance of FIMS data. Along with timely maintenance updates, the 2001 FIMS Initiative data was completed on time, the new SC's Rehab and Improvement Cost (RIC) and Modernization Planning Indicator (MPI) data fields were populated by the requested due date in 2003 and updated in September 2004. In 2001 and 2002, all facility floor plans were updated and polylined to automate the calculations for gross and net occupiable square footage. These floor plans are updated with the as-built drawings for each project and the square footage calculations are updated in FIMS on an annual basis in accordance with the FIMS QA Plan along with occupants, lease data, maintenance data, and MARS reconciliation. Improvements and new facilities are entered into FIMS with the completion of each project. In August 2003, Jefferson Lab completed reconciliation of capitalized costs between FIMS and MARS. As a result, new assets were added under the OSF category to capture the acquisition costs associated with related personal property. The Conventional Facility Indicator for these assets is 0% and the value is not included in Replacement Plant Values (RPVs) listed below.

Listed on the following page is a table that compares the 2003 RPVs with the 2004 RPVs with explanation of differences greater than 5%. In 2004, Jefferson Lab revised the site factor to utilize the form in the FIMS User's Guide. Three separate site factors were established – one for buildings and OSFs, one for real property trailers, and one for personal property trailers.

Table IV-6. Replacement Plant Value

FIMS Asset Type	2004 RPV	2003 RPV	% Difference	Comment
DOE Buildings	$87,124,358	$83,963,514	3.76%	
Real Property Trailers	$4,840,031	$2,922,547	65.61%	1
Personal Property Trailers	$573,175	$519,788	10.27%	2
OSFs (3000 Category)	$95,267,906	$91,868,762	3.70%	
OSFs (non-3000 Category)	$17,909,536	$13,910,811	28.75%	3
TOTAL	$205,715,006	$193,185,422	6.49%	

Comments:
1. Using the FIMS Model, the square foot value increased from $51.29 to $98.08. Last year, Trailer City was a contractor generated value of $83.57 per square foot.
2. Using the FIMS Model, the square foot value increased from $23.20 to $27.31.
3. Many 2003 values were construction costs only and did not include the Site Factor costs, which were added in the 2004 values.

V. SUMMARY OF RESOURCE NEEDS

A. Planning Assumptions - FY06 to FY10

This Ten Year Site Plan represents a snapshot of the Laboratory's best guess today at how the Lab's need for infrastructure projects will unfold over the next few years. Changing programmatic and budget needs and priorities will alter the projects, scope, timing, and cost estimates. Annual updates to this Plan will reflect these changes. The breath and scope of the ten-year vision reflects an aggressive approach to addressing the evolving Laboratory infrastructure program.

Generally level operating budgets, GPP, SLI construction, and SLI Excess Facilities Disposition funding over the planning period. There will continue to be some variation in allocation of GPP verses operation funds and allocation of GPP funds for high priority projects. 12 GeV funding will be provided during the planning period and addressed in future updates of the TYSP.

Program-driven manpower requirements will drive infrastructure needs. Staffing for the current programs will be constant (within a few percentage points) with the only staffing increase being driven by 12 GeV construction.

The FEL upgrade will continue and will lead to an operational program for the next decade demanding additional facility resources.

Within this decade, failing temporary facilities (trailers and transportainers) must be eliminated, upgrades will be made to existing facilities and equipment, and additional space will be needed for expanded staff for program requirements identified above.

Age and increased loads in the accelerator enclosure will require major HVAC and LCW upgrades. In addition HVAC systems in two large older buildings at the facility (CEBAF Center & Counting House will require replacement with upgrades required for systems in the Test Lab and EEL.

Information technology advancements will continue to require major upgrades to support systems, such as phone switches, computer lines, and computer storage.

We will be able to obtain an excess offset waiver for the square footage of new construction exceeding that disposed of at Jefferson Lab.

Funding and staffing will be consistent with numbers included in Attachment 10.

There will be no impact on the existing building code variances (waivers) from the transition to external regulation.

B. Planning Assumptions - FY11 to FY15

GPP and SLI funding will increase to provide needed funding to accomplish the following goals of the Ten Year Site Plan.

> The Laboratory's facilities and infrastructure will be adequate to accommodate each laboratory's expected programmatic mission activities and technological changes well into the 21st century.
>
> Facilities will be "right-sized" to the type and quality of space and equipment needed to meet mission needs. Activities and organizations that need to be co-located will be. Facilities will be readily adaptable to changing research requirements and technologies. Off-site leased space will be reduced where economically appropriate.
>
> The Laboratory will achieve a quality of facilities that provides a "preferred" working environment for our researchers that helps attract and retain high quality staff. The laboratory will employ the latest advances in information technology to enhance worker productivity, interactions with other scientists, and the advancement of science. Quality training and conferencing facilities will be available. Visiting scientists will have access to quality accommodations and to research support facilities.
>
> The Laboratory's F&I will provide a safe, healthy, and secure working environment for laboratory employees and visitors. Retired facilities will be removed and environmental cleanup will be completed. The Laboratory will be viewed as a good community neighbor.
>
> Funding and staffing will be consistent with numbers included in Attachment 10 with the exception of the SRF, which would be funded by High Energy Physics.

F&I improvement projects will be designed and constructed to be efficient to operate and maintain while minimizing the effects of system unexpected failures.

C. Resource Table

The Integrated Facilities & Infrastructure Budget datasheet (Attachment 9) outlines the funding requirements for Line item, GPP, maintenance, and excess facility for the Plan period. Figures for 12 GeV conventional facilities have been excluded. Operating lease to own costs have been shown to demonstrate impact on the Laboratory's total budget.

Table V. Facilities Funding Needs FY2004-FY2015 (M$)

($ in Millions)	GPP Projects	GPP Projects (Non-NP Funds)	Line Item Projects	Additional Operating Funds (Lease to Own)
FY2004 Budget	2.1	0	9.0	0
FY2005 Required	2.1	0.3	0	0
FY2006 Required	2.1	0.4	0	0
FY2007 Required	2.1	1.2	19.0	0.7
FY2008 Required	2.0	0	19.0	0.7
FY2009 Required	2.0	0	0	0.7
FY2010 Required	2.1	0	0	0.7
FY2011 Required	3.1	0	6.0	0.7
FY2012 Required	4.0	0	0	0.7
FY2013 Required	3.4	0	0	0.7
FY2014 Required	4.5	0	0	0.7
FY2015 Required	5.0	0	0	0.7
Total Facilities Plan	**34.5**	**1.9**	**53.0**	**6.3**

D. Line Item Construction Projects

CEBAF Center Addition Phase 2. This project will provide for the construction of approximately 90,000 square feet (SF) in two separate wing additions to CEBAF Center, Building 12. The D Wing will be a two-story addition occupied by additional users and staff. Wing E/F will be a three-story addition connected to the Phase I Addition on all three floors. The first and second floor primarily allows relocation of functions (library, document center, and conference rooms) currently in leased space. The third floor will provide office space and small meeting rooms. The project includes demolition of Trailers 35, 52A, 52B, and 52C, about 5,000 SF, installed between 1988 and 1995 and removal of about 3,000 SF of offices from the Test Lab High Bay. Offsetting space has been identified from the East Tennessee Technology Park (ETTP). This project is the second of three phases to provide much needed space for world-class scientists to collaborate on various physics programs and consolidate staff currently in numerous trailers and leased office space. Relocation of the library and document center collocate the resources with the majority of the staff. The increased office space consolidates the majority of the Physics and Accelerator staff for efficient teaming needed for physics collaboration. This project is

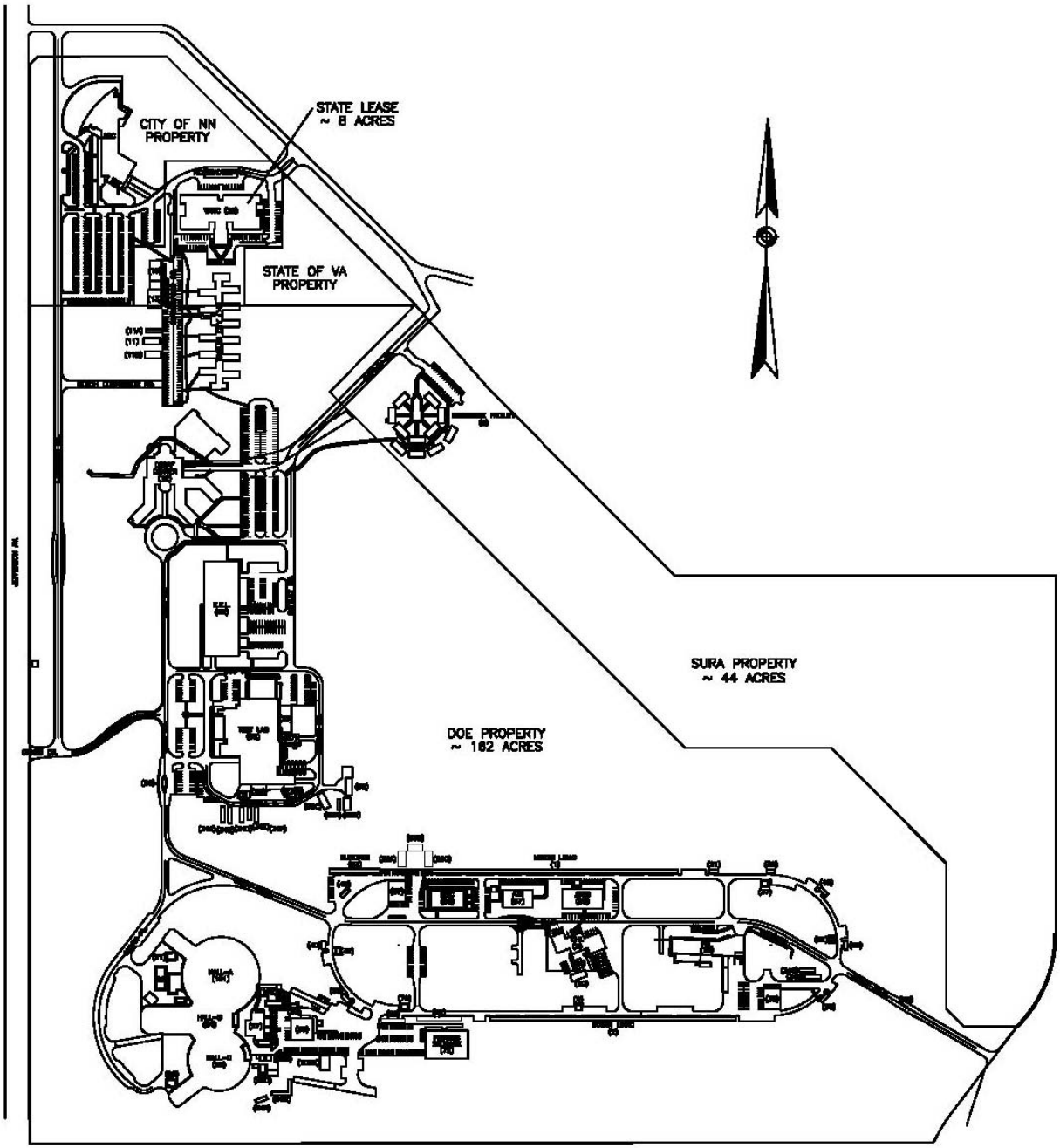
a higher priority than the next because it moves staff out of inadequate trailer space and leased space.

SRF Engineering Test Facility: This project will provide the construction of a 20,000 SF Engineering Test Facility comprising industrial space with full crane access, clean rooms, and office space for an additional 15 to 20 staff. This is a new facility to support SRF technology not only for the 12 GeV Upgrade project here at Jefferson Lab but major involvement work on the International Linear Collider, RIA, 8 GeV LINAC at Fermi, Superconducting LINAC at Brookhaven, and FEL work for the Navy. The initial cost estimate for this facility is $20M.

Test Lab Rehab. The Test Lab was constructed in 1965 by NASA and was transferred to DOE in 1987 with 110 acres. The building had been in caretaker status by NASA for a number of years prior. It is Jefferson Lab's largest facility, over 20% of the Lab's building square footage and houses approximately 75 staff for the Lab's Superconducting Radio Frequency (SRF) operations. With the initial construction of Jefferson Lab and then SNS cryomodule construction, operations have been set up by existing building features such as the Test Cave and are not efficient or flexible. The high bay area has three levels of mezzanines with a mix of functions including offices, labs, and storage. This limits the use of the crane in the high bay area. This project is to reconfigure the operations in the high bay area to collocate the production, R&D, and lab functions for efficiency and safety. The project also includes capital renewal of the major building systems such as mechanical and electrical, code compliance updates, and seismic upgrades.

Summary Overview at TJNAF

Total Building Space (gross ft^2)	407,191 (9th largest)
Buildings	62 (7th largest)
Largest Occupied Building (gross ft^2): Test Lab (Bldg #058)	95,828 SF
Trailers, number of:	113
Real Property	43
Personal Property	70
Wooden Buildings	8
Excess Facilities:	N/A
Uncontaminated	N/A
Contaminated	N/A
Excess Building Space Removed in FY04	N/A
Replacement Plant Value (RPV): Total	$205,146,606
Programmatic (OSF 3000 category)	$95,267,906
Non-Programmatic (used for calculating Indices)	$109,878,700
Landlord Program	SC Nuclear Physics
Age of Buildings: Average	13 years
% of space older than 40 years	0
% of space 30 years or younger	79.10%
Maintenance Investment Index (MII) & Maintenance Funding	
FY 03	2.2% ($2,252)
FY 04	3.0%($3,261)
FY 05 (estimate)	2.1% (2,457)
FY 06 (estimate)	2.0% (2,572)
FY 07 (estimate)	2.0% (2,976)
Deferred Maintenance (DM) Trend	
DM 2002	$11,228,738
DM 2003	$12,555,919
DM 2004	$9,598,380
DM 2005 (estimate)	$9,900,000
DM 2006 (estimate) *Decrease due to completion of CEBAF Center Addition	$7,400,000
Total Summary Condition (DM + RIC) *:	$52,969,178
Deferred Maintenance (DM)	$9,598,380
Rehab and Improvement Cost (RIC)	$43,370,798
*Doesn't include personal property trailers	
Total Summary Condition Index (TSCI): (percent of Total RPV) *	25.8%
Facility Condition Index (FCI) (based on DM)	4.7%
Rehab & Improvement Cost Index (based on RIC)	21.1%
ACI (Asset Condition Index from RPAM Order) (1-FCI)	.95 (good)
AUI (Asset Utilization Index from RPAM Order)	1.0 (excellent)
Leased assets:	
Square footage: Total	93,543 sf
Office	63,681 sf
Other	29,862 sf
Annual Lease Costs:	$649,336



Attachment 1. Existing Site Plan

Attachment 2. Jefferson Lab Site Photo

Commonwealth Funded FEL Facility

City of Newport News Applied Research Center (ARC)

Attachment 3. Picture of ARC and FEL Buildings

List of Facilities
TJNAF

PROPERTY TYPE	PROP ID	PROPERTY NAME	MARS ASSET TYPE	OWNED OR LEASED	Gross SF	2004 REPLACEMENT PLANT VALUE (RPV)	2004 DEFERRED MAINT. (DM)	2004 REHAB COST (RIC)	AGE (YEARS)	SUMMARY CONDITION
Building	008	Central Heluim Liqifier	501	Owned	16,971	$8,671,776	$50,675	$46,973	14	Excellent
Building	008A	CHL PUMP HOUSE	501	Owned	731	$548,921	$4,152	$0	11	Excellent
Building	012	CEBAF Center	501	Owned	66,277	$10,860,103	$183,473	$23,698,622	15	Excellent
Building	013	PE STORAGE SHED	501	Owned	2,990	$169,958	$1,869	$0	5	Excellent
Building	016A	STORAGE SHED BEAMS	501	Owned	68	$3,865	$0	$0	10	Excellent
Building	018	Free Electron Laser Building	501	Owned	31,176	$7,324,416	$8,589	$22,082	7	Excellent
Building	031	Acid Building	501	Owned	1,071	$291,904	$3,193	$100,000	15	Excellent
Building	033	Chemical Storage	501	Owned	612	$166,802	$830	$0	15	Excellent
Building	052	Test Lab Annex	501	Owned	1,326	$333,551	$5,917	$52,744	39	Excellent
Building	054	Radcon Calibration	501	Owned	1,017	$255,823	$0	$0	10	Excellent
Building	054A	PROPERTY STORAGE CANOPY	501	Owned	540	$30,695	$519	$0	10	Excellent
Building	057	Cryogenics Test Facility	501	Owned	2,301	$578,809	$5,710	$0	16	Excellent
Building	058	Test Lab	501	Owned	95,828	$24,105,214	$1,977,598	$9,219,707	39	Adequate
Building	058B	STORAGE SHED	501	Owned	241	$13,699	$13,699	$0	39	Fail
Building	059	Accelerator Tech Shop	501	Owned	3,683	$448,762	$15,468	$0	16	Good
Building	060	GUARD HOUSE	501	Owned	160	$26,695	$1,557	$0	10	Adequate
Building	062	Canon Guard Shack	501	Owned	24	$40,156	$727	$0	5	Excellent
Building	072	Physics Storage Building	501	Owned	20,415	$1,160,430	$11,236	$14,726	6	Excellent
Building	085	Machine Control Center	501	Owned	7,625	$1,716,279	$79,801	$5,500	14	Good
Building	087	Accel Maintenance & Support Bldg	501	Owned	6,720	$818,810	$11,754	$65,057	9	Excellent
Building	089	ATS Building	501	Owned	10,152	$1,236,988	$8,170	$88,295	7	Excellent
Building	090	Experimental Equipment Lab	501	Owned	53,997	$9,600,614	$521,262	$753,153	14	Adequate
Building	090A	Storage Shed	501	Owned	434	$24,669	$1,018	$0	6	Good
Building	090B	Storage Shed	501	Owned	510	$28,989	$0	$0	1	Excellent
Building	096B	HALL B GAS SHED	501	Owned	693	$125,476	$1,557	$0	9	Excellent
Building	096C	HALL C GAS SHED	501	Owned	96	$17,382	$363	$0	9	Good
Building	097	Counting House	501	Owned	16,716	$4,204,854	$17,916	$875,956	11	Excellent
Building	098	Cryo Weld Shop/Service Bldg	501	Owned	6,164	$1,013,685	$20,344	$4,446	11	Good
Building	101A	HALL A GAS SHED	501	Owned	360	$65,182	$571	$0	8	Excellent

List of Facilities
TJNAF

PROPERTY TYPE	PROP ID	PROPERTY NAME	MARS ASSET TYPE	OWNED OR LEASED	Gross SF	2004 REPLACEMENT PLANT VALUE (RPV)	2004 DEFERRED MAINT. (DM)	2004 REHAB COST (RIC)	AGE (YEARS)	SUMMARY CONDITION
Building	102	End Station Refrigeration Bldg	501	Owned	3,040	$550,427	$19,599	$5,938	11	Good
Building	110	SMOKERS SHACK (28)	501	Owned	54	$5,743	$0	$0	11	Excellent
Building	111	SMOKERS SHACK (16)	501	Owned	54	$5,743	$0	$0	11	Excellent
Building	112	SMOKERS SHACK (12)	501	Owned	54	$5,743	$0	$0	11	Excellent
Building	113	SMOKERS SHACK (90)	501	Owned	54	$5,743	$0	$0	11	Excellent
Building	114	SMOKERS SHACK(85)	501	Owned	54	$5,743	$0	$0	11	Excellent
Building	115	SMOKERS SHACK (87/89)	501	Owned	54	$5,743	$0	$0	11	Excellent
Building	116	SMOKERS SHACK (97)	501	Owned	54	$5,743	$0	$0	11	Excellent
Building	001	NORTH LINAC	680	Owned	12,850	$1,600,596	$57,560	$9,269	14	Good
Building	002	SOUTH LINAC	680	Owned	12,850	$1,600,596	$59,117	$9,269	14	Good
Building	004	EXIT STAIR 4	680	Owned	487	$199,909	$5,828	$351	14	Good
Building	007	EXIT STAIR 1	680	Owned	487	$199,909	$5,398	$351	14	Good
Building	021	NORTH EXTRACTOR SVS BLDG	680	Owned	460	$78,536	$3,506	$332	14	Good
Building	037	EXIT STAIR 2	680	Owned	487	$199,909	$9,462	$351	14	Good
Building	038	SOUTH ACCESS BUILDING	680	Owned	6,075	$2,754,837	$21,182	$348,382	14	Excellent
Building	039	EAST ARC SVS BLDG.	680	Owned	460	$78,536	$2,232	$332	14	Good
Building	040	WEST ARC SVS BLDG	680	Owned	460	$78,536	$2,751	$332	14	Good
Building	042	EXIT STAIR 6	680	Owned	259	$106,317	$2,351	$187	14	Good
Building	045	WEST ARC SVS BLDG	680	Owned	548	$93,560	$2,803	$395	14	Good
Building	049	EAST ARC SVS BLDGS	680	Owned	548	$93,560	$4,535	$395	14	Good
Building	050	EAST ARC SVS BLDG	680	Owned	548	$93,560	$4,328	$395	14	Good
Building	053	Injector Service Bldg	680	Owned	3,150	$505,733	$4,331	$2,272	14	Excellent
Building	056	WEST ARC SVS BLDG	680	Owned	460	$78,536	$3,322	$332	14	Good
Building	061	EXIT STAIR 3	680	Owned	259	$106,317	$2,076	$187	14	Excellent
Building	063	EAST ARC SVS BLDG	680	Owned	460	$78,536	$2,855	$332	14	Good
Building	067	NORTH ACCESS BUILDING	680	Owned	6,075	$2,673,784	$12,110	$348,382	14	Excellent

List of Facilities
TJNAF

PROPERTY TYPE	PROP ID	PROPERTY NAME	MARS ASSET TYPE	OWNED OR LEASED	Gross SF	2004 REPLACEMENT PLANT VALUE (RPV)	2004 DEFERRED MAINT. (DM)	2004 REHAB COST (RIC)	AGE (YEARS)	SUMMARY CONDITION
Building	068	WEST ARC SVS BLDG	680	Owned	1,217	$207,778	$3,478	$878	14	Excellent
Building	070	EXIT STAIR 5	680	Owned	487	$199,909	$5,828	$351	14	Good
Building	082	SOUTH EXTRACTOR SVS BLDG	680	Owned	2,289	$285,118	$9,058	$1,651	14	Good
Building	091	BEAM DUMP COOLING BLDG.	680	Owned	630	$426,810	$1,557	$454	11	Excellent
Building	092	SERVICE BLDG	680	Owned	2,487	$399,288	$2,180	$0	11	Excellent
Building	095	BEAM DUMP COOLING BLDG	680	Owned	630	$426,810	$3,114	$454	11	Excellent
Building	099	EXIT STAIRWELL	680	Owned	212	$87,024	$1,557	$153	14	Excellent
Building	019	FM Maintenance Shop		Leased	2,904	$392,904	$21,106	$0	39	
Building	028	VARC		Leased	34,739	$6,995,207	$385,242	$33,331	39	
Building	ARC	Applied Research Center		Leased	44,342		$38,477		6	
RP Trailer	010	Cryo Trailer	501	Owned	1,187	$116,425	$116,425		14	Fail
RP Trailer	011	Physics Trailer	501	Owned	1,187	$116,425	$116,425		11	Fail
RP Trailer	011A	Accelerator Trailer	501	Owned	672	$65,912	$65,912		16	Fail
RP Trailer	011B	Accelerator Trailer	501	Owned	1,328	$130,255	$130,255		15	Fail
RP Trailer	016	Trailer City	501	Owned	27,595	$2,706,618	$2,766,644		18	Fail
RP Trailer	034A	Accel. Tech.	501	Owned	753	$73,857	$73,857		17	Fail
RP Trailer	034B	Accel Tech Trailer B	501	Owned	753	$73,857	$73,857		17	Fail
RP Trailer	034C	Building Trailer was 15	501	Owned	660	$64,735	$64,735		15	Fail
RP Trailer	034D	Trailer	501	Owned	660	$64,735	$64,735		17	Fail
RP Trailer	034E	Trailer	501	Owned	517	$50,709	$50,709		16	Fail
RP Trailer	034F	Accel Tech Trailer F	501	Owned	660	$64,735	$64,735		17	Fail
RP Trailer	034G	User Group Trailer	501	Owned	660	$64,735	$64,735		14	Fail
RP Trailer	035	Accelerator EH&S Trailer	501	Owned	1,676	$164,388	$164,388		16	Fail
RP Trailer	052A	Radiation Control Trailer	501	Owned	661	$64,833	$64,833		13	Fail
RP Trailer	052B	Radiation Control Trailer	501	Owned	1,322	$129,667	$129,667		9	Fail
RP Trailer	052C	Radcon Training Center	501	Owned	1,327	$130,157	$130,157		10	Fail
RP Trailer	053A	Accel Installation Trailer	501	Owned	1,187	$116,425	$116,425		9	Fail
RP Trailer	053B	Accel Installation Trailer	501	Owned	1,187	$116,425	$116,425		9	Fail
RP Trailer	053C	Accel Installation Trailer	501	Owned	1,187	$116,425	$116,425		9	Fail
RP Trailer	054B	FM Equipment Canopy	501	Owned	400	$39,233	$0		2	Excellent
RP Trailer	094A	Physics Trailer Hall B	501	Owned	649	$63,656	$63,656		10	Fail
RP Trailer	096D	Install Trailer Hall B	501	Owned	1,295	$127,018	$127,018		11	Fail
RP Trailer	101B	Hall A Tech Trailer	501	Owned	1,823	$178,806	$178,806		7	Fail

List of Facilities
TJNAF

PROPERTY TYPE	PROP ID	PROPERTY NAME	MARS ASSET TYPE	OWNED OR LEASED	Gross SF	2004 REPLACEMENT PLANT VALUE (RPV)	2004 DEFERRED MAINT. (DM)	2004 REHAB COST (RIC)	AGE (YEARS)	SUMMARY CONDITION
PP Trailer	092A	Facilities Storage Shed	725	Owned	192	$5,243	$104		6	Excellent
PP Trailer	092B	Facilities Storage Shed	725	Owned	192	$5,243	$104		6	Excellent
PP Trailer	801	Container F21923	725	Owned	280	$7,646	$7,646		24	Fail
PP Trailer	802	Container Physics (90)	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	803	Container SNS	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	804	Container	725	Owned	320	$8,738	$8,738		19	Fail
PP Trailer	805	Container	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	806	Container	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	807	Container	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	808	Container F24198	725	Owned	280	$7,646	$7,646		35	Fail
PP Trailer	809	Container F24319	725	Owned	280	$7,646	$7,646		35	Fail
PP Trailer	810	Container F2667	725	Owned	320	$8,738	$8,738		36	Fail
PP Trailer	811	Container f219267	725	Owned	280	$7,646	$7,646		36	Fail
PP Trailer	812	Container F27496	725	Owned	280	$7,646	$7,646		36	Fail
PP Trailer	813	Container F2808	725	Owned	320	$8,738	$8,738		35	Fail
PP Trailer	814	Container F2629	725	Owned	320	$8,738	$8,738		27	Fail
PP Trailer	815	Container F24197	725	Owned	280	$7,646	$7,646		36	Fail
PP Trailer	816	Container F28065	725	Owned	320	$8,738	$8,738		36	Fail
PP Trailer	817	Container F219809	725	Owned	320	$8,738	$8,738		36	Fail
PP Trailer	818	Container F219266	725	Owned	320	$8,738	$8,738		24	Fail
PP Trailer	819	Container F219292	725	Owned	320	$8,738	$8,738		36	Fail
PP Trailer	820	Container F219281	725	Owned	320	$8,738	$8,738		36	Fail
PP Trailer	821	Container F219283	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	822	Container F216946	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	823	Container F219278	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	824	Container F219205	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	825	Container F219206	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	826	Container F219207	725	Owned	280	$7,646	$7,646		34	Fail
PP Trailer	827	Container F219208	725	Owned	280	$7,646	$7,646		34	Fail
PP Trailer	828	Container F2 19209	725	Owned	280	$7,646	$7,646		34	Fail
PP Trailer	829	Container F219210	725	Owned	280	$7,646	$7,646		34	Fail
PP Trailer	830	Container F2 19211	725	Owned	280	$7,646	$7,646		34	Fail
PP Trailer	831	Container F219212	725	Owned	280	$7,646	$7,646		34	Fail
PP Trailer	832	Container	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	833	Container	725	Owned	320	$8,738	$8,738		19	Fail
PP Trailer	834	Container	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	835	Container F209598	725	Owned	280	$7,646	$7,646		34	Fail

List of Facilities
TJNAF

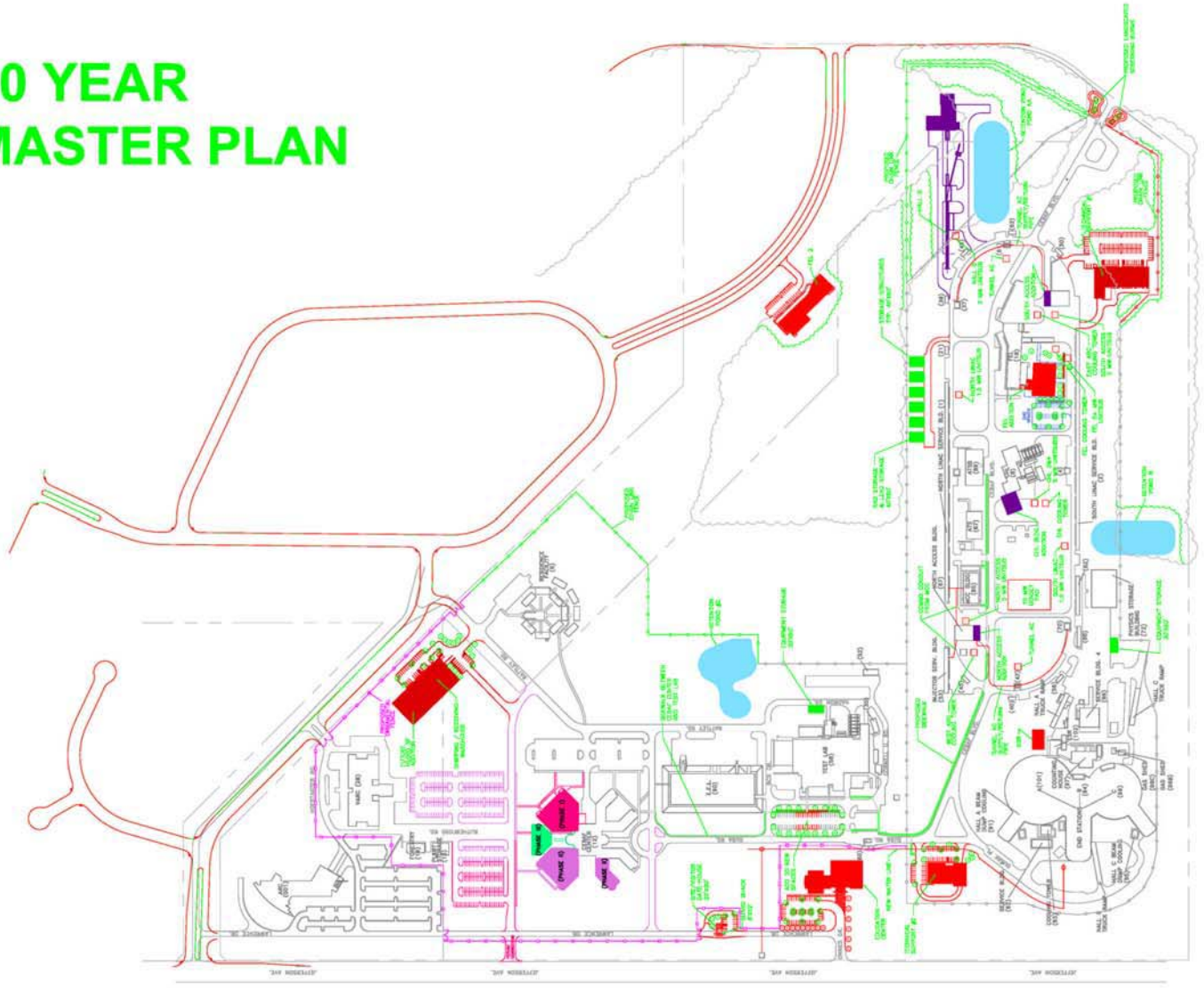
PROPERTY TYPE	PROP ID	PROPERTY NAME	MARS ASSET TYPE	OWNED OR LEASED	Gross SF	2004 REPLACEMENT PLANT VALUE (RPV)	2004 DEFERRED MAINT. (DM)	2004 REHAB COST (RIC)	AGE (YEARS)	SUMMARY CONDITION
PP Trailer	836	Container F28334	725	Owned	280	$7,646	$7,646		34	Fail
PP Trailer	837	Container F27925	725	Owned	280	$7,646	$7,646		34	Fail
PP Trailer	838	Container F2192654	725	Owned	280	$7,646	$7,646		34	Fail
PP Trailer	839	Container F208910	725	Owned	280	$7,646	$7,646		34	Fail
PP Trailer	840	Container F28063	725	Owned	280	$7,646	$7,646		34	Fail
PP Trailer	841	Container F210791	725	Owned	280	$7,646	$7,646		34	Fail
PP Trailer	842	Container F219765	725	Owned	280	$7,646	$7,646		34	Fail
PP Trailer	843	Container F217966	725	Owned	280	$7,646	$7,646		34	Fail
PP Trailer	844	Container F23501	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	845	Container F23502	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	846	Container 4316	725	Owned	280	$7,646	$7,646		31	Fail
PP Trailer	847	Transportainer F219284	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	848	Container F219924	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	849	Container F219276	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	850	Container F219277	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	851	Container F219301	725	Owned	280	$7,646	$7,646		34	Fail
PP Trailer	852	Container F219301	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	856	Container F219286	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	857	Container F219280	725	Owned	280	$7,646	$7,646		38	Fail
PP Trailer	858	Container F219279	725	Owned	280	$7,646	$7,646		36	Fail
PP Trailer	859	Container F2809	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	860	Container F24344	725	Owned	280	$7,646	$7,646		26	Fail
PP Trailer	861	Container F2628	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	862	Container F24200	725	Owned	280	$7,646	$7,646		32	Fail
PP Trailer	863	Container F209956	725	Owned	280	$7,646	$7,646		34	Fail
PP Trailer	864	Container SNS	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	865	Container 865	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	866	Container 866	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	867	Container 867	725	Owned	320	$8,738	$8,738		34	Fail
PP Trailer	868	Container Physics	725	Owned	160	$4,369	$4,369			Fail
PP Trailer	869	Container Hall A869	725	Owned	320	$8,738	$8,738			Fail
PP Trailer	870	Container Hall A 870	725	Owned	320	$8,738	$8,738			Fail
PP Trailer	TENT	Helios Storage Tent	725	Owned	1,200	$12,188	$0		4	Excellent
OSF	SITE PREPARATION	Site Preparation	460	Owned	0	$2,969,902	$20,952	$31,805	17	
OSF	STORM DRAINAGE	Sitewide Storm Drainage System	460	Owned	0	$357,882	$173,869	$1,572,300	17	

List of Facilities
TJNAF

PROPERTY TYPE	PROP ID	PROPERTY NAME	MARS ASSET TYPE	OWNED OR LEASED	Gross SF	2004 REPLACEMENT PLANT VALUE (RPV)	2004 DEFERRED MAINT. (DM)	2004 REHAB COST (RIC)	AGE (YEARS)	SUMMARY CONDITION
OSF	PARKING	Sitewide Parking	470	Owned	0	$1,464,152	$0	$419,326	18	
OSF	ROADS	Sitewide Roads	470	Owned	0	$2,640,515	$248,988	$418,413	17	
OSF	SIDEWALKS	Sitewide Sidewalks	470	Owned	0	$219,029	$39,163	$86,357	14	
OSF	FENCING	Accel Site Security Fence	480	Owned	0	$447,378	$0	$600,000	17	
OSF	014	Cooling Tower	550	Owned	0	$515,452	$112,500	$0	14	
OSF	044	Cooling Tower	550	Owned	0	$389,028	$112,500	$33,333	14	
OSF	065	Cooling Tower	550	Owned	0	$389,028	$112,500	$43,333	14	
OSF	093	Cooling Tower	550	Owned	0	$389,028	$112,500	$33,334	11	
OSF	103	ESR Cooling Tower	550	Owned	0	$163,388	$0	$0	2	
OSF	BLOCK HOUSE	RADCON Block Structure	550	Owned	0	$64,435	$0	$0	13	
OSF	COMM	Telecommunication	610	Owned	0	$1,470,845	$0	$200,000	20	
OSF	ELECTRICIAL SYSTEM	Site Wide Elect Distribution System	615	Owned	0	$2,664,963	$45,000	$3,368,649	17	
OSF	SEWAGE SYSTEM	Sitewide Sewage System	640	Owned	0	$395,487	$0	$0	17	
OSF	LCW SYSTEM	Low Conductivity Water System	650	Owned	0	$2,296,828	$333,127	$611,040	14	
OSF	MONITORING WELLS	Boundary Radiation Monitor Wells	650	Owned	0		$0	$0	15	
OSF	POTABLE WATER SYSTEM	Sitewide Potable Water System	650	Owned	0	$1,072,196	$0	$0	17	
OSF	094	Hall B	680	Owned	17,706	$11,665,737	$49,103	$12,772	11	
OSF	096	Hall C	680	Owned	28,415	$21,218,824	$72,390	$20,496	11	
OSF	101	Hall A	680	Owned	34,861	$24,758,990	$64,902	$20,369	11	
OSF	999	Beam Tunnel Facility	680	Owned	111,810	$37,624,355	$100,000	$220,285	14	

RP - Real Property
PP - Personal Property

10 YEAR MASTER PLAN



SYM.	ZONE	DESCRIPTION	APPR.	DATE
		REVISIONS		

DJG
ENGINEERS - ARCHITECTS - SURVEYORS

DESIGNED
DRAWN
CHECKED
DATE 08-13-04

USER

PLANT ENGINEERING
CIVIL/CONSTRUCTION

CONCEPT REVIEWED	DATE	DESIGNED	DATE
		DRAWN	
CHECKED		CHECKED	
APPROVED		APPROVED	

TJNAF

THOMAS JEFFERSON NATIONAL ACCELERATOR FACILITY
NEWPORT NEWS, VIRGINIA
UNITED STATES DEPARTMENT OF ENERGY

TITLE:
JEFFERSON LAB
10 YEAR MASTER PLAN

SCALE	DRAWING NUMBER	SHEET	REV
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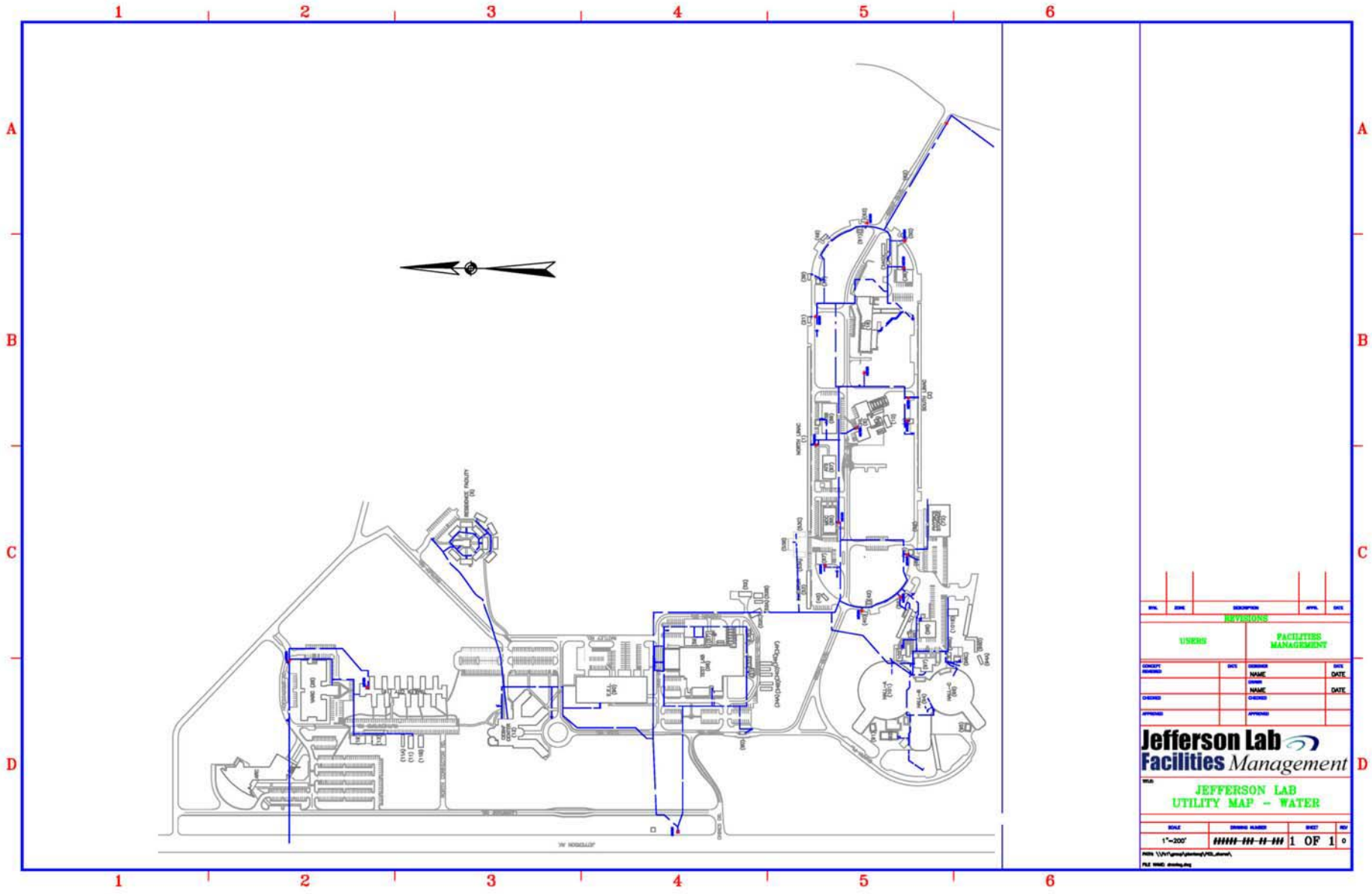
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JEFFERSON LAB
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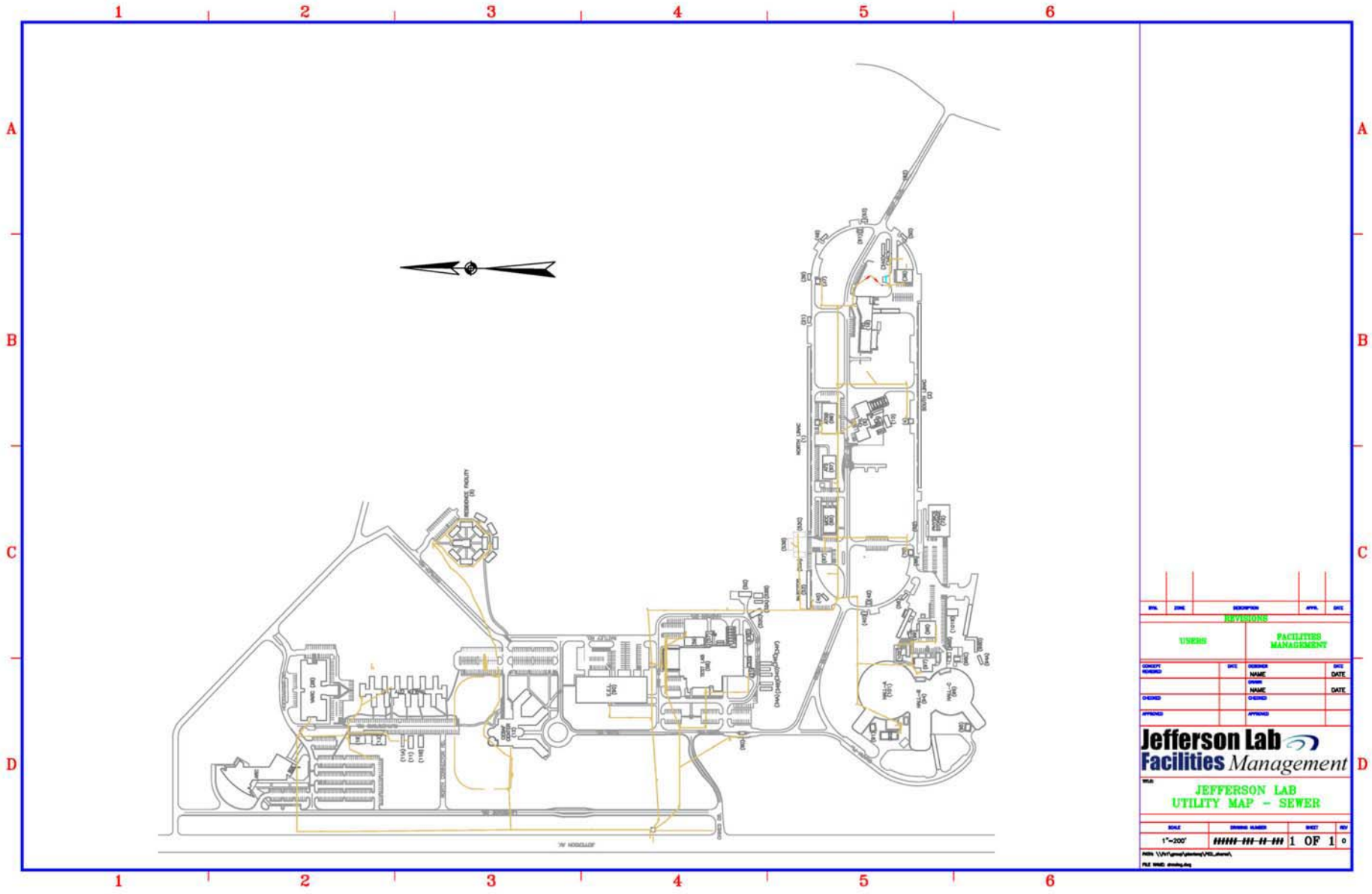
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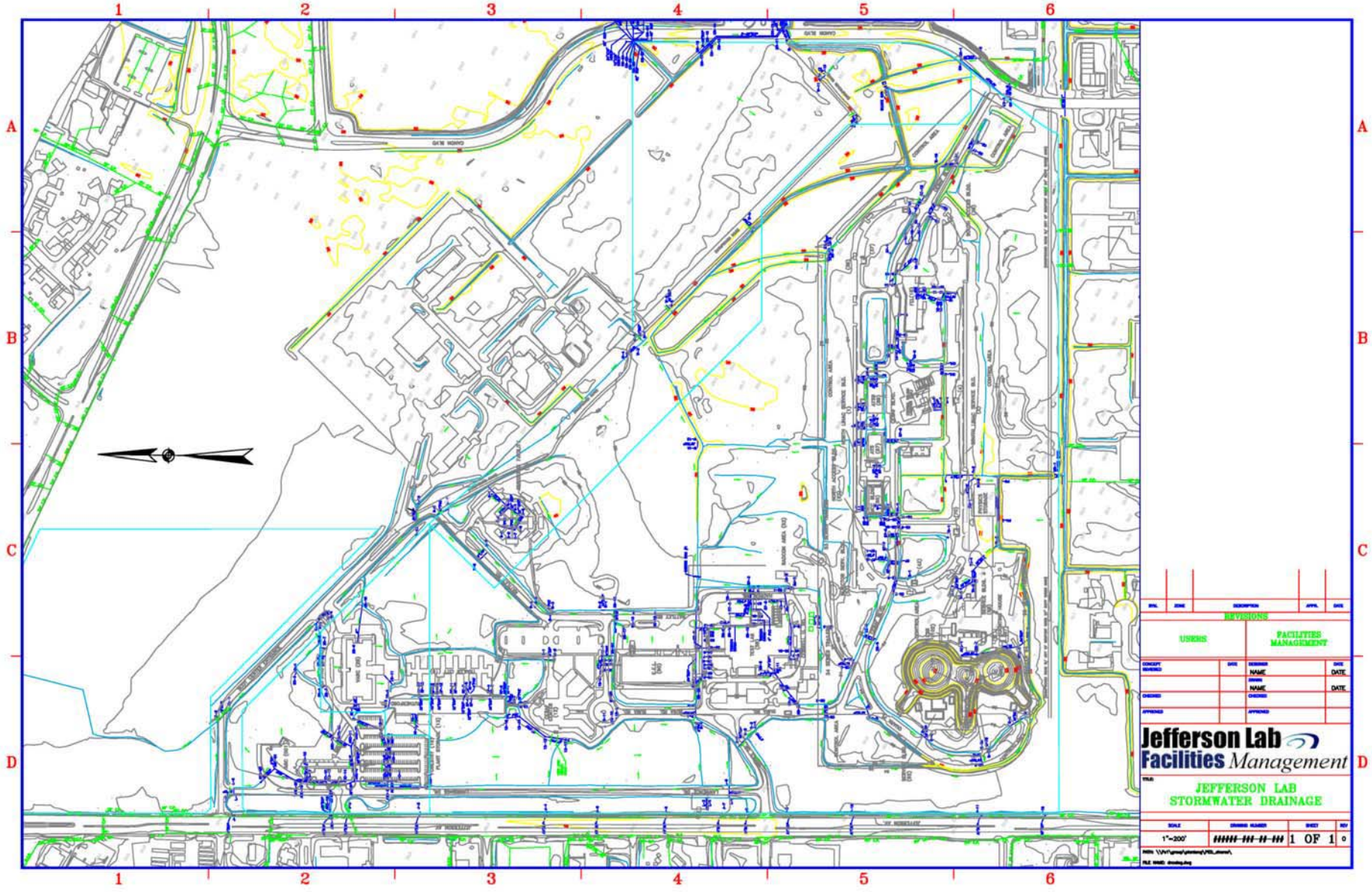
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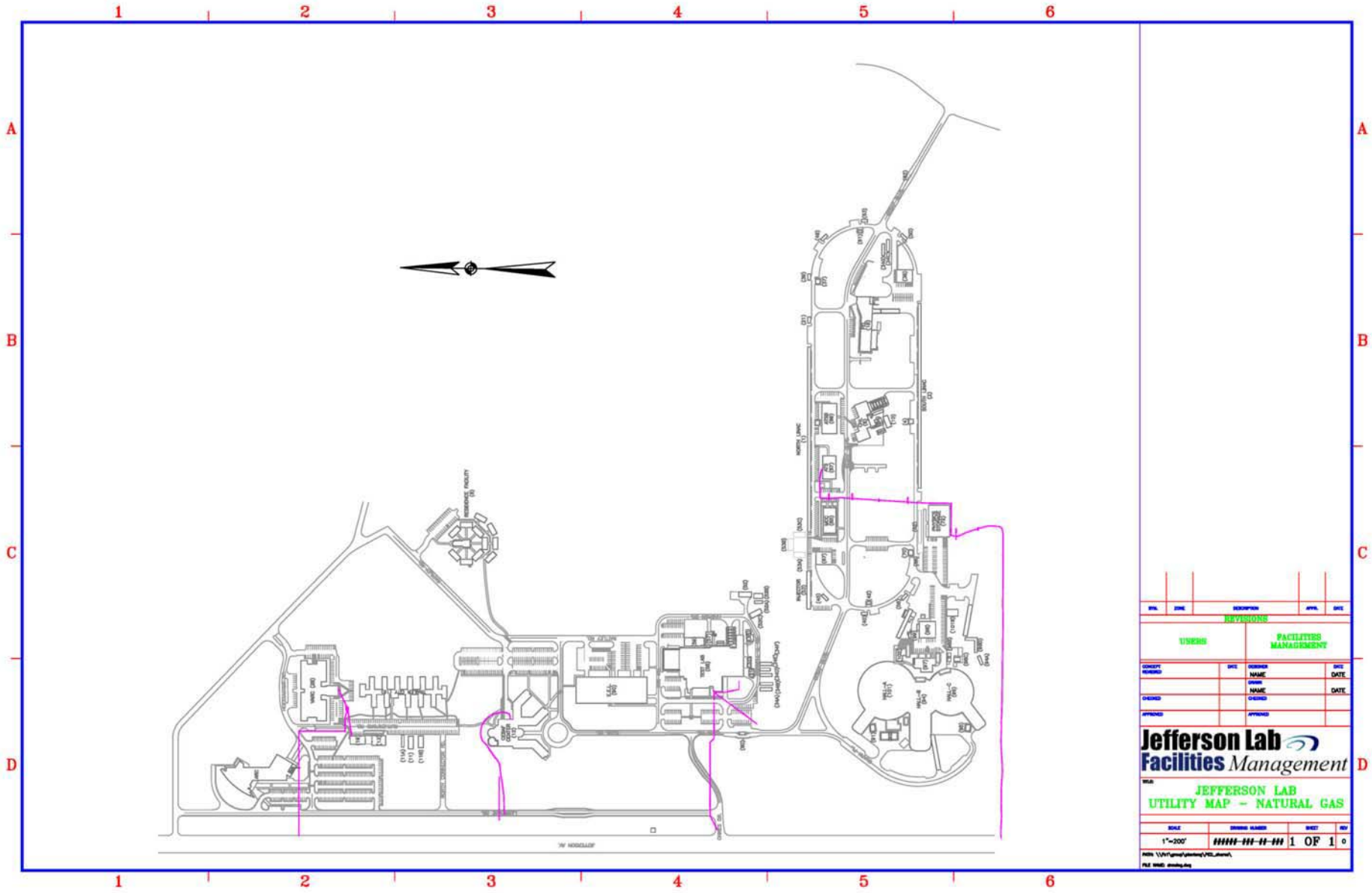
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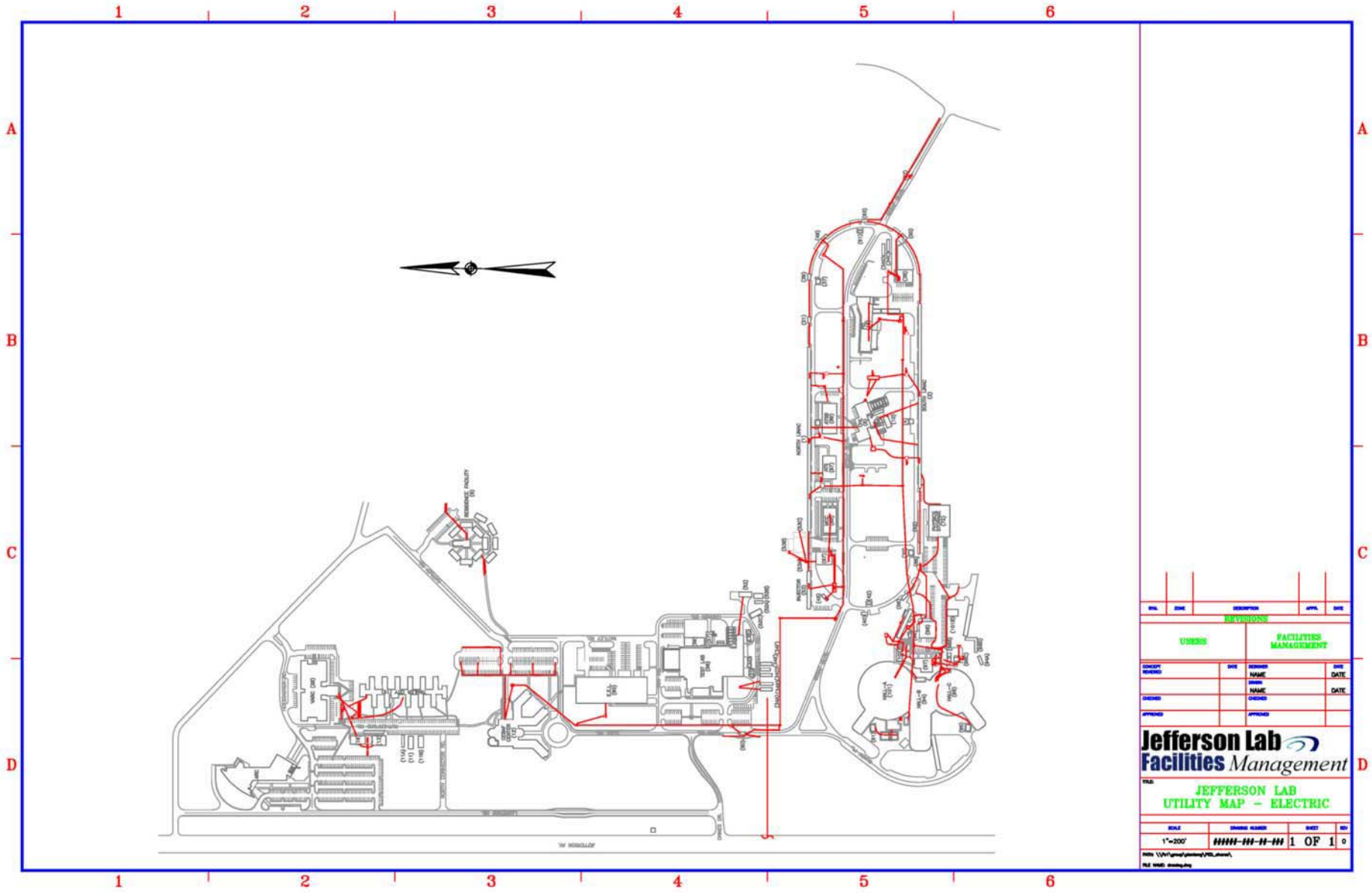
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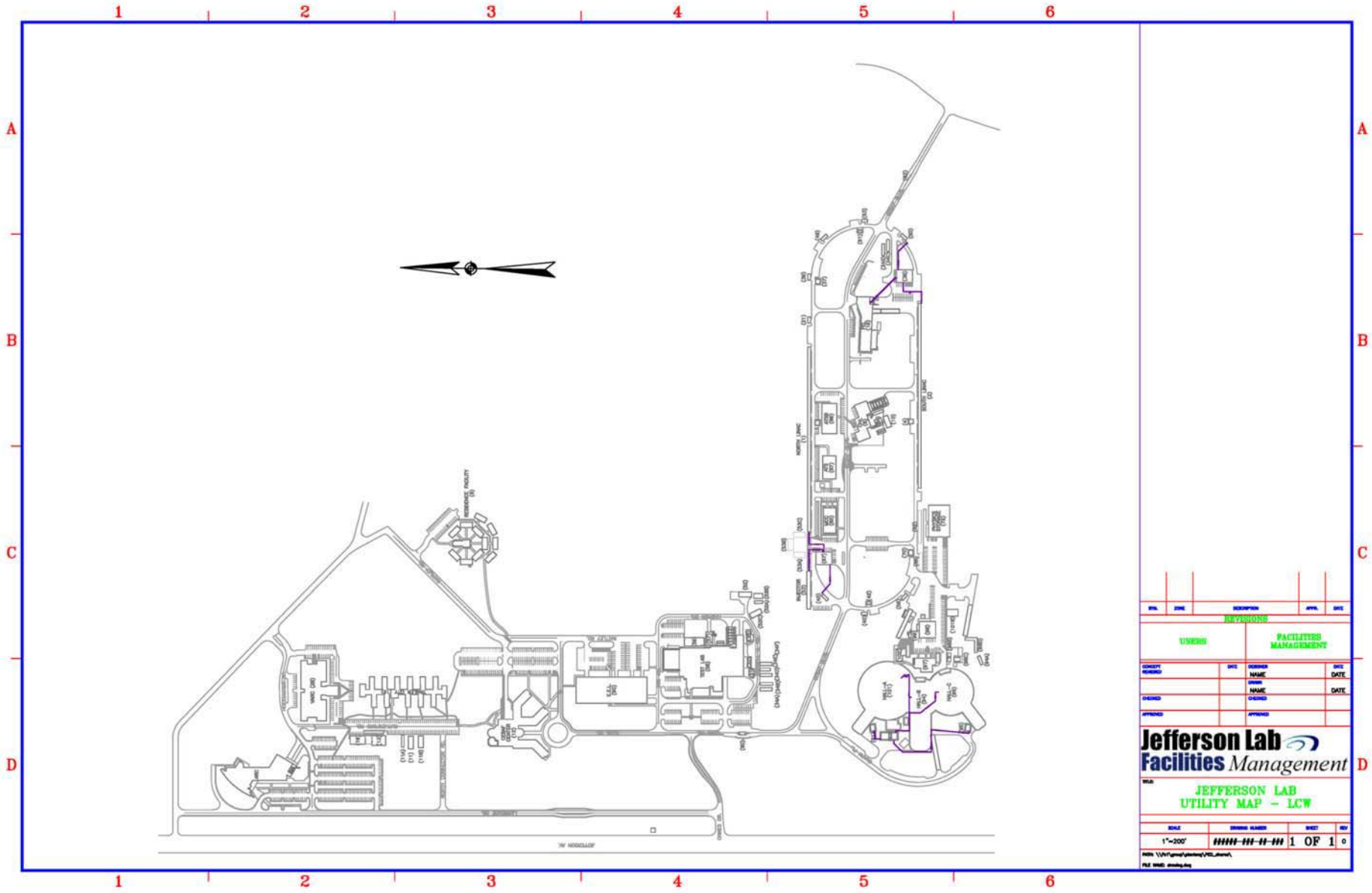
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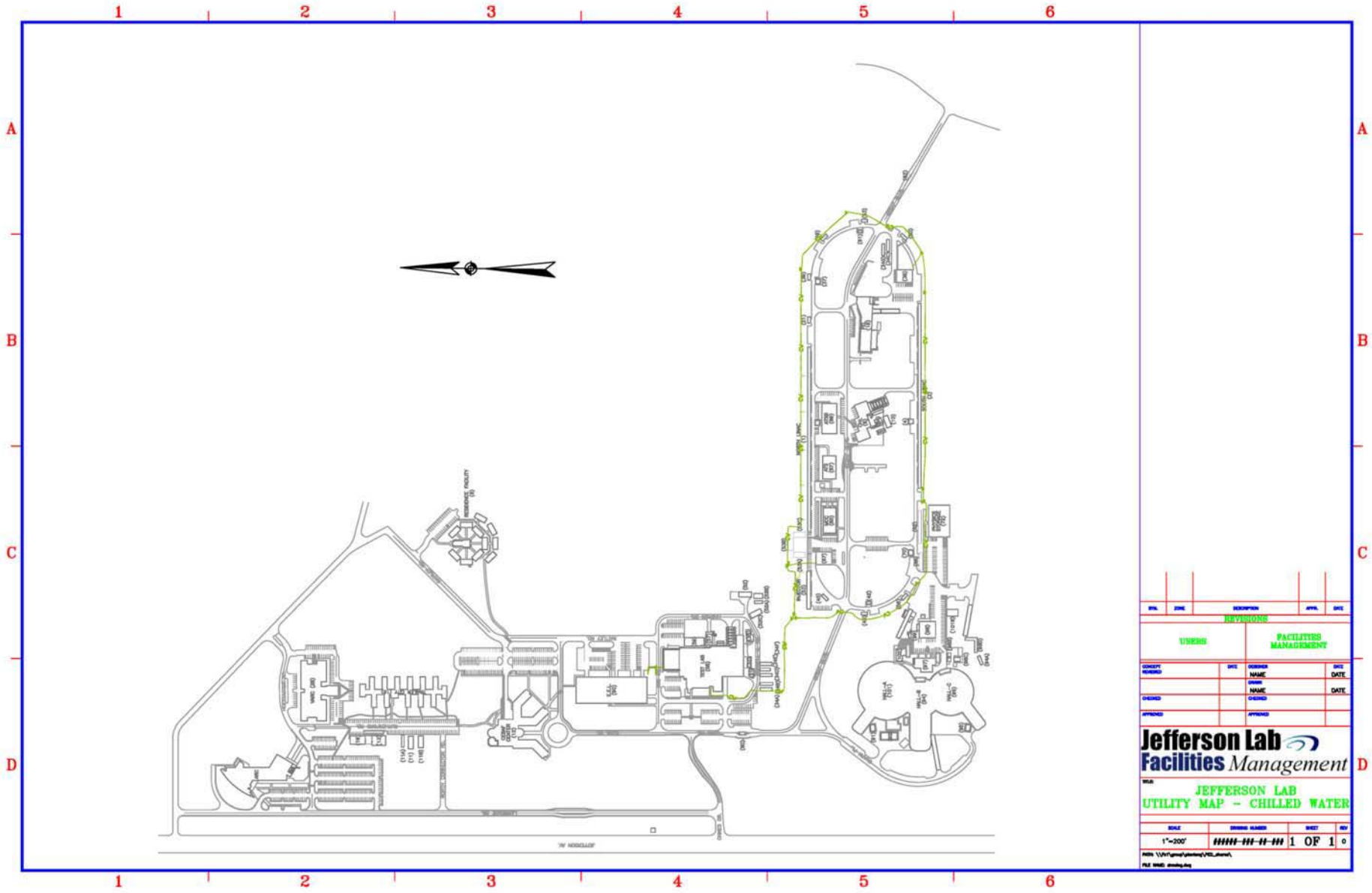
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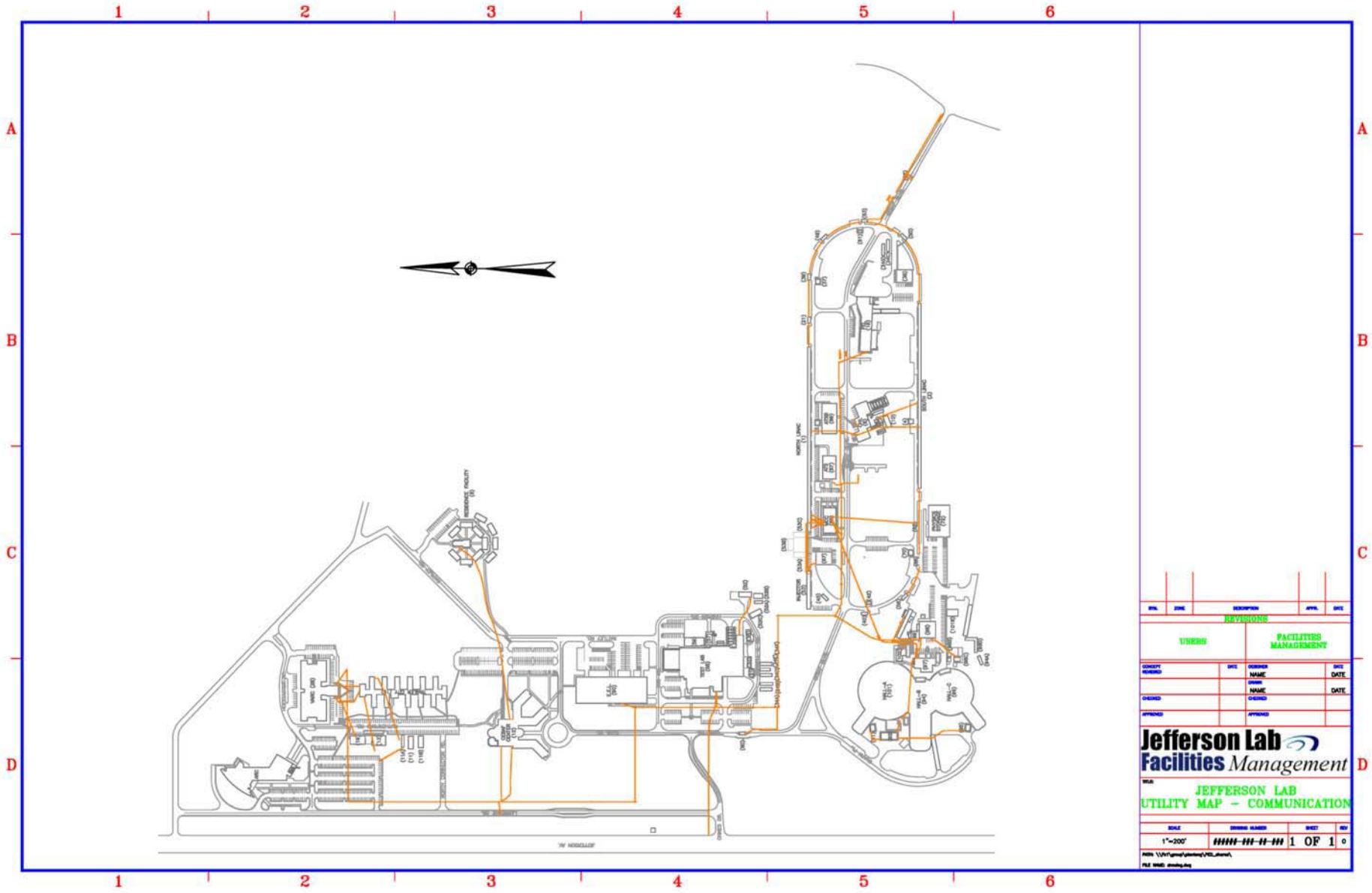
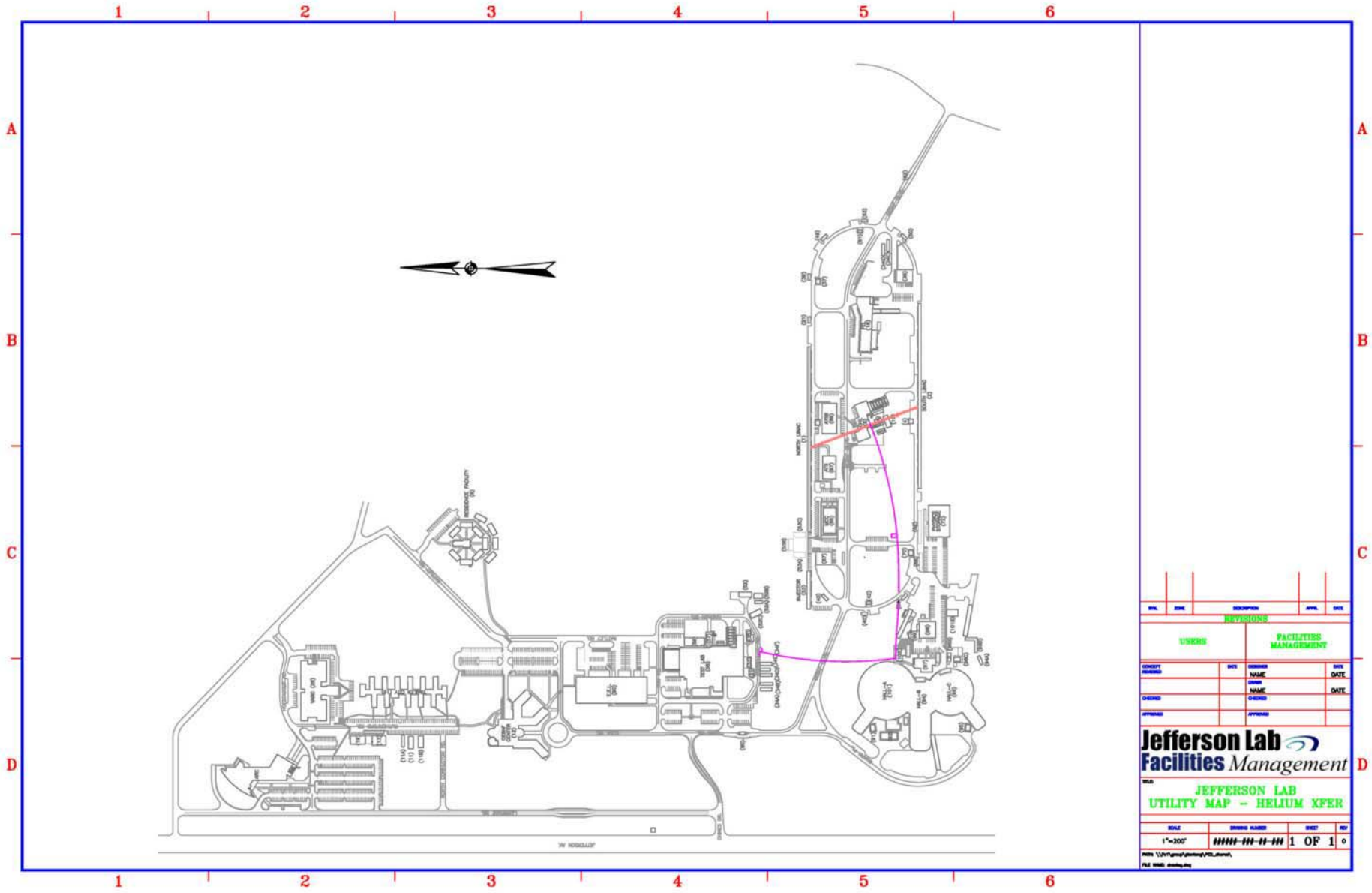


Attachment 6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JEFFERSON LAB
UTILITY MAP - HELIUM XFER
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Deferred Maintenance Summary

Type	Square Feet	Replacement Plant Value	Actual Maintenance	Maint. Investment Index (MII)	Deferred Maintenance	Facility Condition Index (FCI)	Asset Condition Index (ACI)	Rehab & Improvement Costs (RIC)
Buildings								
DOE Owned Buildings	407,191	$87,129,133	$2,657,920	3.05%	$3,200,087	3.67%	0.963	$35,678,987
State Leased Buildings	37,643	$7,388,111	$71,640	0.97%	$406,348	5.50%	0.945	$33,331
ARC	42,724	N/A	$55,015	N/A	$38,477	N/A	N/A	$0
Leased Warehouse Space	11,558	N/A	$2,456	N/A	N/A	N/A	N/A	
Subtotal	499,116	$94,517,244	$2,787,031	N/A	$3,644,912	N/A	N/A	$35,712,318
Trailers								
Real Property Trailers	49,346	$4,840,031	$88,994	1.84%	$4,800,798	99.19%	0.008	$0
Personal Property Trailers (includes transportainers)	21,744	$573,175	$0	N/A	$550,709	N/A	N/A	$0
Subtotal	71,090	$5,413,206	$88,994	N/A	$5,351,507	N/A	N/A	$0
Other Structures & Facilities (OSF)								
Tunnel	111,810	$37,624,355	$47,277	0.13%	$186,396	0.50%	0.995	$220,285
Halls	80,982	$57,643,551	$131,753	0.23%	$100,000	0.17%	0.998	$53,637
Other (Utilities/Roadways)	N/A	$17,909,536	$514,362	2.87%	$1,311,099	7.32%	0.927	$7,417,889
Subtotal	192,792	$113,177,442	$693,392	0.61%	$1,597,495	1.41%	0.986	$7,691,811
TOTAL	762,998	$213,107,892	$3,569,417	N/A	$10,593,914	N/A	N/A	$43,404,129
TOTAL DOE OWNED	671,073	$205,719,781	$3,440,306	1.67%	$10,149,089	4.93%	0.951	$43,370,798
DOE BUILDINGS & OSF's	599,983	$200,306,575	$3,351,312	1.67%	$4,797,582	2.40%	0.976	$43,370,798
DOE BUILDINGS, REAL PROPERTY TRAILERS, & NON-3000 OSF	456,537	$109,878,700	$3,261,276	2.97%	$9,311,984	8.47%	0.915	$43,096,876
Residence Facility	17,768	$1,552,418	$14,827	0.96%	N/A	N/A	N/A	N/A

Category	FY02			FY03			FY04		
	RPV ($M)	DM ($M)	FCI (%)	RPV ($M)	DM ($M)	FCI (%)	RPV ($M)	DM ($M)	FCI (%)
Buildings	$78.81	$7.31	9.3%	$83.96	$8.21	9.8%	$87.13	$3.20	3.7%
Real Prop Trailers	$2.76	$2.72	98.6%	$2.92	$2.92	100.0%	$4.84	$4.84	100.0%
Personal Prop Trailers	$0.46	$0.41	89.1%	$0.52	$0.47	90.4%	$0.57	$0.55	96.5%
OSF Non-3000 Category	$12.81	$0.97	7.6%	$13.91	$1.22	8.8%	$17.91	$1.31	7.3%
OSF 3000 Category	$89.02	$0.23	0.3%	$91.87	$0.20	0.2%	$95.27	$0.29	0.3%
Total	$183.86	$11.64	6.3%	$193.18	$13.02	6.7%	$205.72	$10.19	5.0%

FCI History for FY02 Through FY04

Category	FY05 Projected			FY06 Projected			FY07 Projected			FY08 Projected		
	RPV ($M)	DM ($M)	FCI (%)	RPV ($M)	DM ($M)	FCI (%)	RPV ($M)	DM ($M)	FCI (%)	RPV ($M)	DM ($M)	FCI (%)
Buildings	$89.3	$3.0	3%	$104.6	$2.8	3%	$107.1	$2.5	2%	$123.3	$2.5	2%
Real Prop Trailers	$5.0	$4.9	99%	$2.9	$2.8	98%	$2.2	$2.1	96%	$2.2	$2.1	95%
Personal Prop Trailers	$0.5	$0.5	100%	$0.5	$0.4	98%	$0.5	$0.5	98%	$0.5	$0.5	96%
OSF Non-3000 Category	$19.6	$1.2	6%	$20.7	$1.1	5%	$22.0	$0.8	4%	$23.0	$0.8	4%
OSF 3000 Category	$97.2	$0.3	0%	$99.1	$0.3	0%	$101.1	$0.3	0%	$103.1	$0.3	0%
Total	$211.6	$9.9	5%	$227.8	$7.4	3%	$232.8	$6.1	3%	$252.1	$6.2	2%

FCI Projections for FY05 Through FY08

Attachment 8. FCI History and Projections for FY05 Through FY08

FY 2006 Facilities and Infrastructure Budget Crosscut Data Entry Sheet

Integrated Facilities and Infrastructure Budget Data Sheet (IFI)	Project Number	Gross Building Area	FY 2004 Budget ($000)	FY 2005 Target Budget ($000)	FY 2006 Target Budget ($000)	FY 2007 Target Budget ($000)	FY 2008 Target Budget ($000)	FY 2009 Target Budget ($000)	FY 2010 Target Budget ($000)	FY 2011 Target Budget ($000)	FY 2012 Target Budget ($000)	FY 2013 Target Budget ($000)	FY 2014 Target Budget ($000)	FY 2015 Target Budget ($000)
SITE NAME: JEFFERSON LAB														
PROGRAM														
1.0 Capital Line Item (Include project number & identify Funding Program)														
1.1 New Construction (facilities and additions)														
CEBAF Center Addition, Phase 1 (SLI Funded)	MEL-001-033	61,000	9,019											
CEBAF Center Addition Phase 2 (SLI Funded)		81,000				9,000	9,000							
SRF Engineering Test Facility (BES Funded)		20,000				10,000	10,000							
12 GeV Conventional Facilities		25,000			TBD	TBD	TBD	TBD						
Test Lab Rehab (SLI Funded)										6,000				
1.2 All Other Projects (recap)														
Subtotal Line Item Projects		**187,000**	9,019	-	-	19,000	19,000	-	-	6,000	-	-	-	-
2.0 General Plant Project (GPP) (Include project number & identify Funding Program)														
2.1 New Construction (facilities and additions)														
Hall A Laser Building	04-GPP-300-1	420	175											
Accelerator Loop Generator (Additional NP funding)	04-GPP-300-2		650											
Accelerator Site Technical Building (Redirected)	04-GPP-300-3	16,000	1,000	1,000	1,000									
Computer Center UPS (Redirected)	04-GPP-300-4		65											
High Pressure Rinse Pump House (Redirected)	04-GPP-300-5	78	35											
Hall C 2 MW Transformer (Redirected)	04-GPP-300-6		59	66										
Injector Cleanroom (Redirected)	04-GPP-300-7		126											
Test Lab Fire Protection Improvements	05-GPP-300-1			150										
Upgrade Accelerator Fire Detection Zones	05-GPP-300-2			150	155									
Lead Storage Facility	05-GPP-300-3	500		150										
General Site Storage (1 bldg)	05-GPP-300-4	2,400		300										
EEL Mods for Target Group	05-GPP-300-5	300		76										
CTF Cooling Tower (Redirected)	05-GPP-300-6			150										
Enlarge Counting House Cable Chase	05-GPP-300-7			35										
CEBAF Center Kitchen Upgrade	05-GPP-300-8			40		350								
North Connector Road Parking Lot	05-GPP-300-9			30		220								

FY 2006 Facilities and Infrastructure Budget Crosscut Data Entry Sheet

Integrated Facilities and Infrastructure Budget Data Sheet (IFI)	Project Number	Gross Building Area	FY 2004 Budget ($000)	FY 2005 Target Budget ($000)	FY 2006 Target Budget ($000)	FY 2007 Target Budget ($000)	FY 2008 Target Budget ($000)	FY 2009 Target Budget ($000)	FY 2010 Target Budget ($000)	FY 2011 Target Budget ($000)	FY 2012 Target Budget ($000)	FY 2013 Target Budget ($000)	FY 2014 Target Budget ($000)	FY 2015 Target Budget ($000)
Gate House	05-GPP-300-10			300										
Acid Neutralization Bldg HVAC	06-GPP-300-1				100									
Sidewalk CC to Gate House	06-GPP-300-2				40									
LQCD Power and Cooling (LQCD Funded)	06-GPP-300-3				100	900								
Additional Site LCW (FELL Funded)	06-GPP-300-4				300	300								
East Site Drainage Improvements	06-GPP-300-5				700									
South Connector Road	06-GPP-300-6				150									
General Site Storage (2 Bldgs.)	07-GPP-300-1	4,800				500								
Mobile Equipment Storage (1 of 2)	07-GPP-300-2	1,800				200								
Bldg 52 Seismic Upgrade	07-GPP-300-3					50								
Cooling Tower Variable Frequency Drives	07-GPP-300-4					100								
North Connector Road Extension	07-GPP-300-5					220								
Rehab CEBAF Center HVAC	07-GPP-300-6					400	400							
Upgrade emergency Generator & extend power network	07-GPP-300-7					35								
Sidewalk from Gate House to 87	07-GPP-300-8					30								
Mobile Equipment Storage (2 of 2)	08-GPP-300-1	4,800					200							
Communications Upgrade	08-GPP-300-2						300							
End Station Refrigerator Building & Utilities	08-GPP-300-3	3,600					1,000	1,500						
Miscellaneous Projects (FY08)	08-GPP-300-4						50							
Rehab Counting House HVAC	09-GPP-300-1							500						
West Site Waterline Loop	09-GPP-300-2							150						
8 MW Emergency Power Switch	10-GPP-300-1								1,500					
General Site Storage (2 Bldgs)	10-GPP-300-2	4,800							500					
Test Lab Code Corrections	10-GPP-300-3								100	1,500	1,000			
West Site Retention Pond	11-GPP-300-1									500				
Test Lab Primary/Secondary Electrical Renewal	11-GPP-300-2									1,100				
Shipping/Receiving & Storage	12-GPP-300-1	21,000									2,000			1,500
Accelerator Site Road Improvements	12-GPP-300-2										250			

FY 2006 Facilities and Infrastructure Budget Crosscut Data Entry Sheet

Integrated Facilities and Infrastructure Budget Data Sheet (IFI)	Project Number	Gross Building Area	FY 2004 Budget ($000)	FY 2005 Target Budget ($000)	FY 2006 Target Budget ($000)	FY 2007 Target Budget ($000)	FY 2008 Target Budget ($000)	FY 2009 Target Budget ($000)	FY 2010 Target Budget ($000)	FY 2011 Target Budget ($000)	FY 2012 Target Budget ($000)	FY 2013 Target Budget ($000)	FY 2014 Target Budget ($000)	FY 2015 Target Budget ($000)
Site Lighting Improvements	12-GPP-300-3										250			
Test Lab Parking Improvements	12-GPP-300-4										150			
FELL Addition Ph 1	12-GPP-300-5	23,500									300	2,000	2,500	
Badge Office	13-GPP-300-1	500												500
Perimeter Fence	13-GPP-300-2											900		
Digital Optics & Laser Lab	13-GPP-300-3											500		
Test Lab Code Update	14-GPP-300-1												2,000	
Education Center	15-GPP-300-1	22,300												3,000
2.2 All Other Projects (recap)														
Subtotal GPP:		**106,798**	2,110	2,447	2,545	3,305	1,950	2,150	2,100	3,100	3,950	3,400	4,500	5,000
3.0 Institutional General Plant Project (IGPP)														
N/A														
Subtotal IGPP Projects														
4.0 Operating/Expense for Excess Elimination and Other														
4.1 Excess Elimination (demolition, sale, lease, transfer) Show area eliminated in Gross Area column														
N/A														
4.1 Subtotal														
4.2 All Other (List direct O&E maintenance under 5.1)														
BPA Financed Energy Projects (loan repayment)			572	572	572	572	572	572	572	572	379	379	379	379
4.2 Subtotal			572	572	572	572	572	572	572	572	572	572	572	572
Subtotal Operating/Expense Projects			572	572	572	572	572	572	572	572	572	572	572	572
TOTAL Capital & Operating Investment:			11,701	3,019	3,117	22,877	21,522	2,722	2,672	9,672	4,522	3,972	5,072	5,572
TOTAL Overhead Investments (IGPP)			0	0	0	0	0	0	0	0	0	0	0	0

FY2006 Facilities and Infrastructure Budget Crosscut Data Entry Sheet

Integrated Facilities and Infrastructure Budget Data Sheet (IFI)	Project Number	Gross Building Area	FY 2004 Budget ($000)	FY 2005 Target Budget ($000)	FY 2006 Target Budget ($000)	FY 2007 Target Budget ($000)	FY 2008 Target Budget ($000)	FY 2009 Target Budget ($000)	FY 2010 Target Budget ($000)	FY 2011 Target Budget ($000)	FY 2012 Target Budget ($000)	FY 2013 Target Budget ($000)	FY 2014 Target Budget ($000)	FY 2015 Target Budget ($000)
SITE NAME: JEFFERSON LAB														
PROGRAM:														
5.0 Maintenance & Repair														
5.1 Direct Funded (by HQ or Site Program)														
Health Safety Improvement Funding			338											
Safeguards & Security			50	50	50	50	50	50	50	50	50	50	50	50
Total Direct Maintenance & Repair			388	50	50	50	50	50	50	50	50	50	50	50
5.2 Indirect (from Overhead or Space Charges)			2,200	2,244	2,289	2,550	2,601	2,653	3,066	3,127	3,190	3,253	3,318	3,385
Include indirect O/E manitnenance projects in total														
Total Indirect Maintenance & Repair			2,200	2,244	2,289	2,550	2,601	2,653	3,066	3,127	3,190	3,253	3,318	3,385
6.0 Indirect O&E Excess Elimination (demolition, sale, lease, transfer) Show area eliminated in Gross Area column														
Excess Trailers (Technical Support Bldg 1)		8,200				40								
Excess Trailers (Technical Support Bldg 2)		13,700				50								
Excess Trailers (General Site Storage)		8,000								35				
Excess Trailers (Shipping/Receiving-Storage)		12,160										40		
Total Indirect Excess Elimination		**42,060**	0	0	0	90	0	0	0	35	0	40	0	0

NOTE: Indirect maintenance is funded from overhead generated from a G&A pool. Estimate for FY2004 G&A rate is 30 % of all direct labor and the first $50K of every purchase or modification.

Integrated Facilities and Infrastructure Budget Data Sheet (IFI)	Project Number	FY 2004 Budget ($000)	FY 2005 Target Budget ($000)	FY 2006 Target Budget ($000)	FY 2007 Target Budget ($000)	FY 2008 Target Budget ($000)	FY 2009 Target Budget ($000)	FY 2010 Target Budget ($000)	FY 2011 Target Budget ($000)	FY 2012 Target Budget ($000)	FY 2013 Target Budget ($000)	FY 2014 Target Budget ($000)	FY 2015 Target Budget ($000)
SITE NAME: JEFFERSON LAB													
PROGRAM:													
7.0 Area of Excess Eliminated													
List of projects, by type of funding, with project number, and excess AREA eliminated by fiscal year accomplished.													
Line Item													
CEBAF Center Addition, Phase 1 (TJNAF) (Excess existing trailers)	MEL-001-033			22,000									
CEBAF Center Addition, Phase 2 (TJNAF) (Excess existing trailers)							8,000						
GPP													
IGPP													
Operations/Expense													
Indirect Operations/ Expense													
Excess Trailers (Technical Support Bldg 1)					8,200								
Excess Trailers (Technical Support Bldg 2)					13,700								
Excess Trailers (General Site Storage)									8,000				
Excess Trailers (Shipping/Receiving-Storage)											12,160		
Transfer by sale or lease, or transfer to an outside federal agency													
Subtotal of Excess Facility Area Eliminated				22,000	21,900	-	8,000	-	8,000	-	12,160	-	
Total Area to be Eliminated Each Year (Demolition, Sale or Transfer Completion Year)	X			22,000	21,900	-	8,000	-	8,000	-	12,160	-	
Total Area to be Added by GPP, IGPP, and LI Construction (List Area Under Occupancy Year)	X	78	3,620	61,000	22,600	9,800	22,600	106,800			12,500		23,500

JEFFERSON LAB
OUTYEAR FUNDING PROJECTIONS

	FY04 Actual	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15
FUNDING M$: (FY05 - FY15 Requirements)												
Office of Science												
Nuclear Physics Funding:												
Operating	70.5	82.0	83.5	85.8	87.4	89.2	91.0	92.9	94.9	96.9	97.6	99.6
Capital Equipment	7.5	8.7	8.9	9.1	9.3	9.5	9.7	9.9	10.0	10.2	10.5	10.7
GPP	2.1	2.1	2.1	2.1	2.0	2.2	2.1	3.1	4.0	3.4	4.5	5.0
AIP	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
SRF Center of Excellence			3.0									
EBAC			1.0									
LQCD	0.4	1.0	1.4	1.8	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
RIA	0.1											
12 GeV TPC	0.7	2.3	5.0	37.0	68.5	70.0	21.0	13.0	8.0			
12 GeV Operations										10.0	10.0	10.0
Subtotal Nuclear Physics	**82.4**	**97.3**	**107.1**	**137.0**	**170.4**	**174.1**	**127.0**	**122.1**	**120.1**	**123.7**	**125.8**	**128.5**
SciDAC - Lattice QCD/PPDG	0.9	2.6	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Biological & Environ. Research	0.9	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Prog Direction - Undergrad Fellowship	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Facility Support – CEBAF Ctr Additions	9.0			9.0	9.0							
Facility Support – Test Lab Rehab								6.0				
Facility Support - Infrastructure	.3											
Total SC Funding	93.8	100.9	111.2	150.1	183.5	178.2	131.1	132.2	124.2	127.8	129.9	132.6
Office of Management, Budget & Eval:												
SNS	4.1	0.7										
FEL – NAVY, AF, JTO	15.6	15.0	18.9	19.4	23.3	23.7	16.8	13.1	4.0	4.0	4.0	4.0
Misc Other DOE	.6	.2										
TOTAL DOE FUNDING	114.1	116.8	130.9	169.5	206.8	201.9	147.9	145.3	128.2	131.8	133.9	136.6
Office of Security & Emergency Ops:	1.0	1.5	1.6	1.6	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9
Commonwealth of VA	1.2	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
TOTAL FUNDING	**116.3**	**119.9**	**133.3**	**172.7**	**210.1**	**205.2**	**151.2**	**148.7**	**131.6**	**135.2**	**137.4**	**140.1**

Attachment 10. Out Year Funding and Staffing (FY06-FY15 with FY04 & FY05)

JEFFERSON LAB
OUTYEAR STAFFING PROJECTIONS

	FY04 Actual	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15
Full Time Equivalent (FTEs)												
Office of Science (excluding SNS)	494	496	509	606	647	647	622	552	552	552	552	552
SNS	46	22										
Safeguards & Security	5	5	5	5	5	5	5	5	5	5	5	5
Other DOE`	10	6	4	4	4	4	4	4	4	4	4	4
FEL (Navy, AF, JTO)	36	65	55	40	40	70	39	35	10	10	10	10
Commonwealth of Virginia	11	11	11	11	11	11	11	11	11	11	11	11
Indirect Staff	135	137	139	139	139	139	139	139	139	139	139	139
TOTAL STAFFING	**737**	**742**	**723**	**805**	**846**	**876**	**820**	**746**	**721**	**721**	**721**	**721**

Attachment 10. Out Year Funding and Staffing (FY06-FY15 with FY04 & FY05)